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Hemorrhagic Septicemia of Cattle; With Special Reference to Stockyards Pneumonia*

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THE disease which has been called stock-yards fever, stock-yards pneu-a, shipping fever of cattle, malignant catarrhal fever, etc., has made its appearance in various parts of Michigan during the past three years, and the disease as it occurs in this state in no way differs from the same disease as described in other states by a number of veterinarians during the past five years. In all of the outbreaks of the disease that I have seen in Michigan, the history, symptoms and lesions found at autopsy tally very well with the condition as observed previously in Minnesota, and described by the late Dr. S. H. Ward.[1]

It has been suggested that this disease is a form of hemorrhagic septicemia, and there appear to be several reasons why this view has been taken. As a matter of fact it appears that definite and conclusive proof, in the form of scientific evidence, is lacking to prove that the Bacterium bovisepticum is the primary etiological factor. In the first place, the hemorrhagic septicemia organism is reported to have been isolated from cases of the disease. Then we have the septic pleuro-pneumonia of calves, as described by Poels[2] over thirty years ago, and believed by him to have been caused by a member of the hemorrhagic septicemia group. This disease coincides in practically every essential detail with our so-called stock-yards pneumonia, from a pathological standpoint. Further, we have many favorable reports to the effect that the disease is being successfully prevented by immunizing exposed cattle with hemorrhagic septicemia vaccines and bacterins.

It is not my intention in this paper to deny the etiological relationship of the hemorrhagic septicemia organism to the disease in question. I will admit, however, that the doubt has existed at various times. The mere finding of the Bacterium bovisepticum in the blood or tissues at autopsy is not sufficient proof in itself that the organism is the primary infecting agent. Bacillus suipestifer is found quite frequently in cases of hog cholera, but we know that it is not the cause of the disease. The results obtained with hemorrhagic septicemia vaccines and bacterins are certainly suggestive, but it is so difficult to get accurate and reliable data on treated and untreated animals under identical conditions, that we must withhold our final verdict until such time as suitable evidence is available.

Nature of the Disease

First of all, it should be remembered that several forms of bovine hemorrhagic septicemia have been described; namely, the abdominal, pectoral, nervous or meningeal, and the cutaneous or exanthematous form. As implied by these terms, the di-

*Read before Illinois State Veterinary Medical Association, Champaign, Ill., July 8, 1919.

sease differs in its clinical manifestations, with the part of the body affected. The last named form of the disease is believed, by some veterinarians, to be identical with the so-called "mad itch." Stock-yards fever or pneumonia is thought to be the pectoral form of hemorrhagic septicemia.

The disease in question seems almost invariably to be associated with a short residence in certain of our large public stock-yards. Whether this is an essential factor in the disease, or only a coincidence, is open to question. Young cattle, stockers and feeders, that have come into these yards, stayed there a few days, been sold and shipped out again, frequently develop the disease shortly after arrival at their destination. In most cases only a part of the animals in the shipment develop the disease, sometimes 20 per cent, sometimes 50 per cent. It should not be stated, perhaps, that the disease is confined to young cattle of any special market class. It is possible that butcher cattle may be just as susceptible, but owing to the fact that these cattle are slaughtered shortly after their arrival in the yards, the disease does not have time to develop. There have been cases reported in older cows, milkers and springers, animals that have been bought up in the stock-yards by scalpers or speculators, and held too long awaiting a favorable sale. This point has been brought out by Palmer,[3] who observed the disease in the South St. Paul stock-yards. That the disease has a rather definite period of incubation can not be denied.

In most outbreaks of the disease the first trouble is noted in about a week or ten days after the cattle have left the stock-yards. Sometimes a few cases are noted earlier, and it is easily possible that such animals may have had an earlier exposure than the rest, may have been in the yards longer, or may have been more susceptible. Cases rarely develop later than fifteen days after shipment.

Symptoms

In some cases it would be very difficult, indeed, to differentiate between the disease under consideration and a case of ordinary pneumonia. However, with the history of having recently passed through a public stock-yards, and a number of animals showing the same combination of symptoms at the same time, a diagnosis is easily made in most cases. One symptom that may help to distinguish this disease from ordinary pneumonia is the conjunctivitis so frequently present. This starts as a simple conjunctivitis, with profuse lacrimation, and a pronounced puffiness of the conjunctivae. The eye troubles may end here, or go on to a more severe inflammation of the conjunctivæ, extending into the cornea (keratitis) with or without ulceration. The discharge changes from a serous to a mucous, muco-purulent or purulent nature, sometimes closing the eyes by sealing the lids together. In a few cases only one eye will be involved in these further changes, suggesting that they may be due to traumatisms, or that they are caused by secondary infections.

The attention of the owner or herdsman is first drawn to the sick animals by their dull appearance and loss of appetite. Breathing may be a little quickened, and forced exercise causes some animals to cough. This is apparently painful to the animal, as it is suppressed, dry and harsh. The pulse is accelerated, and in animals that have not become weak, the pulse is usually strong. In very sick animals the pulse is usually almost imperceptible. The temperature frequently goes over 107° F., but a majority of the sick animals will show temperatures ranging from 103.5° to 105.0° F. Little satisfaction is gained from auscultation of the lungs. The pneumonic areas in the lungs are usually found in the apical and cardiac lobes, which are not accessible for auscultation. Increased breathing sounds are noted, as well as friction sounds in some cases. There may be a blood-tinged nasal discharge. Pleurodynia is in evidence, when animals are punched, or when pressure is applied, over the ribs.

The bowels may be constipated or loose. Some animals develop a very severe, fetid diarrhea, The appetite is irregular, and unless tempting food is offered, in the way of beets, carrots, or turnips, either cooked or raw, gruels or alfalfa, the animals will not eat at all. Rumination is suppressed entirely in a few cases. These animals will drool profusely, the saliva hanging in strings from the corners of the mouth, quite the same as in foot and mouth disease. Laymen have noted the fact that animals which reach the drooling stage rarely recover.

Course of the Disease

Some animals are sick only a few days before death supervenes. Others will remain alive for a week or ten days before death ensues, due to exhaustion, coupled with toxemia. The course of the disease is practically unaffected by any form of medicinal treatment administered orally. Indeed, this fact early impresses itself upon the minds of owners of cattle so treated, the various remedies used by veterinarians raring about alike. Animals that become very sick, but eventually recover, are usually stunted for a while and rarely make profitable animals to feed. A small percentage of the animals attacked make quick, spontaneous recoveries. It is quite possible that these animals have no pulmonary complications or very limited involvement of any structures within the thoracic cavity. Such animals, however, are sometimes very sick for a few days and have temperatures running as high as any of the rest.

Post-mortem Pathology

As is to be expected, the thoracic cavity is the seat of most of the important pathological changes. The amount of pleural fluid is increased and it is usually of a sero-gelatinous consistency. The quantity varies from a few ounces to several quarts. The lungs show petechial hemorrhages and pneumonic areas. The latter are usually seen in the apical and cardiac lobes, less frequently in the diaphragmatic lobes. The lungs in these cases bear a marked resemblance to the lungs described in cases of contagious pleuro-pneumonia, in that there is a distinct "marbling" present. This is due to the edema present in the interlobular spaces of the lungs. Various stages of congestion, red and gray hepatization are present in the same lung. On section the larger air-passages are seen to contain a blood-tinged frothy material. The larger bronchioles show congestion of the mucous membrane. This sometimes extends up the bronchi into the trachea, and even to the larynx, and it is not unusual to find all of these structures filled with a frothy exudate. Edema of the throat has been noted in these cases, and usually there will be petchial hemorrhages on the laryngeal mucosa. Areas of pleurisy are frequently present, the pleura being very red and roughened by fibrin formation. The heart shows hemorrhages on the endocardium, sometimes petechial, but frequently extensive ecchymoses are noted. Less frequently hemorrhages are seen on the epicardium. The bronchial and mediastinal lymphnodes are enlarged, congested and hemorrhagic. Lesions in other parts of the body are either absent or not characteristic, varying from case to case, with the secondary complications shown during the course of the disease.

Treatment

As already stated, medicinal treatment is a failure. Kinsley[4] has reported very favorably on the results secured with bacterins prepared from the Bacterium bovisepticum. The same agent has been used successfully to immunize cattle against the infection, although in most cases where cattle are immunized in the yards before being shipped out, it is difficult to follow them up and get accurate reports of the result of vaccination. No news is usually taken as good news, and a falling off in the number of outbreaks reported is usually credited to the use of various immunizing products, little else being taken into consideration.

The variety of conditions under which these immunizing agents are used, and the present lack of any system for getting reliable data on the results obtained, render it difficult to place an accurate value on these products for prophylactic purposes. When we come to a consideration of their use as curative agents, we likewise find all kinds of opinions expressed as to their merits. This is not strange when we consider, first of all, the variety of bacterins and vaccines at the disposal of the veterinarian, and in the second place the variety of conditions under which they are employed. Some veterinarians consider that bacterins and vaccines are absolutely contra-indicated for treating sick animals. Among those who use them we find the greatest differences as to the matter of dosage and intervals between doses. In bacterial vaccine therapy, we should pay more regard to the number of organisms in the material injected than the size of the dose, as expressed in mils or cubic centimeters. One mil of a certain bacterin may contain as many organisms as four mils of another.

In the hope of finding an agent that

might be of service for the treatment of animals already affected, the writer has prepared an anti-hemorrhagic septicemia serum. This is a hyperimmune serum obtained from horses highly immunized with large injections of virulent suspensions of Bacterium bovisepticum intravenously. The product protects small laboratory animals from fatal infection with virulent organisms injected simultaneously. About a dozen strains of the organism were used in the treatment of the horses, and their serum agglutinates some of these strains in rather high dilutions. Complement fixing substances are readily demonstrated in the serum of the horses after they have been on treatment for some time.

Several opportunities have been offered to try out the serum, in typical outbreaks of stock-yards pnuemonia, during the past two years. Any opinions of its value, as expressed in this paper, are based purely on personal observations of the results obtained. In most cases these results have been highly satisfactory as far as the owners of the cattle were concerned. I do not hesitate to say that we appeared to save some very sick animals with large doses of the serum. In others, showing only early symptoms, these seemed to be aborted and the animals made uneventful recoveries following one injection of 50 to 60 mils of serum. Exposed animals not yet showing symptoms were given 30 to 40 mils of serum, and almost invariably these animals failed to come down with the disease, but in herds where we found it possible to leave a number of untreated controls, we found that very few of these animals eventually took sick, if they were not already showing symptoms when first examined.

In one herd where the serum was administered to forty head, in various stages of the disease, all but two showed unmistakable signs of improvement within twenty-four hours, denoted by a fall in the temperature, improvement of the appetite and general appearance of the animals. Those cases which did not respond were the ones with severe gastro-intestinal disturbances. As much as 200 mils of serum have been given to a steer weighing 400 pounds, without saving the animal, while another of equal weight, and to all apearances just as sick, has pulled through with half that amount of serum. It is quite likely that these apparently inconsistent results will continue to be obtained with most antibacterial sera used as curative agents. It could hardly be otherwise with so many complicating factors.

There are many other points in connection with this disease that I would like to touch upon in this paper, but lack of time forbids me. Our investigations are being continued in the laboratory, and in the field as opportunities are presented. There is much still to be learned about this disease we have called stock-yards pneumonia of cattle, as well as all of the other diseases which have been grouped under the name of hemorrhagic septicemia. In this paper I have tried to confine my remarks to but the one form of this disease, one that appears to be a distinct clinical entity. I have seen what appeared to be the same condition in a large band of sheep, numbering some 9,000.[5] On arrival at their destination these sheep were distributed to thirty different farms. The disease appeared in every lot, with considerable variation in the percentage of loss. In this outbreak, as well as all outbreaks of the disease among young cattle, the disease failed to spread to the native animals in a single instance. This may not be strange, when we keep in mind the fact that animals in the same shipment frequently fail to show any signs of the infection. Individual resistance and susceptibility undoubtedly play an important part in this disease.

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Dr. F. M. Kearns, formerly of Lebanon, Ky., has purchased the practice of Dr. Edward M. Lang, Louisville. Ky., and has associated himself with the veterinary firm of Miller & Calldemeier of that city.

Chinese Animal Hides, Skins and Bristles

(Second Report)

By JAMES R. SHAND, M. D. C.
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In presenting this report, it is necessary to refer the reader to my first report on the same subject, written in June, 1916, and published in the August, 1916, issue of the AMERICAN JOURNAL OF VETERINARY MEDICINE, page 609, which may be found in the library of almost any veterinarian. This report is written at the request of Dr. Robert L. Dickinson, United States Public Health Service, and is a revision of my first report, including my further observations during the three years that have elapsed, with certain recommendations.

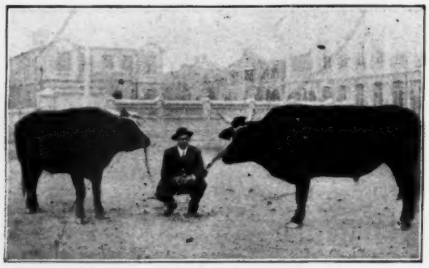
Horse and Cow Hides

As stated in my former report, hides exported from Tientsin, are in two classes, *i. e*: Mongolian and Shantung. The former originate in Mongolia, Manchuria and Northern Chihli. All the horse or pony hides come from this territory. The cow hide is the small, thin, wooly kind. Anthrax, rinderpest, foot and mouth disease, and glanders have been ever present epizootically in this enormous territory and ponies and cattle have died by the thousands from the two former diseases mostly. As I stated before, the Chinaman never loses a hide; it makes no difference of what disease an animal died, its hide is not a loss. The animal is skinned, and the skin dried, and sold to dealers. These hides are now being shipped to the United States in small quantities, after being submerged in a 1-1000 bichlorid solution for 24 hours. Most of these horse or pony hides, and about 75 per cent of the cow hides, show to the expert that the animals from which they came, died from natural causes. I would recommend that the hides known as Mongolian cow hides and North China horse or pony hides, be refused entry into the United States on the ground that they are from animals dead from a contagious disease.

The latter, Shantung hides, are all cow hides and originate in the provinces of Southern Chihli, Shantung, Shansi, Shensi and Honan. These are the large thin-haired hides of superior quality. During the winter of 1917-18, rinderpest was widespread, and caused the deaths of thousands of cattle. In December, 1918, foot and mouth disease appeared in the greater part of the territory named. At the present writing, this disease has become extinct. The Chinese government has no bureau of animal industry and no veterinarians; therefore, when a contagious disease appears it creates great havoc and attacks everything within its reach until it finally runs its course and disappears for a year or so. Foot and mouth disease is not responsible for many deaths. An attack is followed by recovery in from six to eight weeks. In the meantime the animal loses a great amount of flesh and there is a great economic loss to the butcher or dealer. The disease is not fatal to the human. In fact for six months the citizens of Tientsin ate beef, veal and mutton that was infected with foot and mouth disease, with no bad results whatever. Rinderpest on the other hand,

Vaccinating Chinese oxen against anthrax near Fuchinhsien, North Manchuria.

kills the animal (bovines), and kills it quickly. I know of no other contagious disease of animals, that is more acute and virulent and responsible for more deaths. I have seen rinderpest in the Southern Philippines go through a herd of 1,000 cattle killing 75 per cent of them in almost less time than it takes to tell about it. Anthrax has not been reported from this territory, but it is safe and well to assume that it is present, but not on such a large scale as the other two diseases, because anthrax is rather a slow moving disease, and in this territory there are no large herds of cattle or sheep. Half a dozen cattle and a dozen sheep per farmer is the order, but as the rivers of China are continually overflowing in the rainy season, it is safe to assume



Chinese cattle. These animals are both 5 years old. Younger ones seldom come to Tientsin because the demand is not great.

that anthrax does exist in localities at all times.

Hides from these two territories have not been shipped to the United States in any quantities since April 1917. Lately a few shipments of samples have been made, but now that the war is over, they can be expected in large quantities, in the future. The regulation of these hides is a 30 minute immersion in a 1-1000 bichlorid solution, with a certificate of non-prevalence of anthrax.

Goat and Sheep Skins

The long haired goat skins originate in Mongolia and Manchuria, the short haired ones in Shansi, Shensi, and Honan provinces. Sheep skins come from all the places above named. As I have already discussed the contagious diseases that are prevalent in these provinces further comment is unnecessary. As I have not had the opportunity to visit the grazing grounds, I am entirely ignorant about the diseases that these small animals suffer with, but we do know from the text books that goats and sheep are subject to anthrax, rinderpest, and foot and mouth disease, and owing to the fact that these diseases are known to exist in epizootic form where these skins originate, it is safe to assume that they are infected with all three diseases. In examining a cargo of goat and sheep skins, I have noticed that a large percentage are dead hides. This is observed by the integument of the skin being engorged with dried blood, showing conclusively that the animal died a natural death; therefore, it is fair to assume that all shipments are infected with all three diseases. I do not believe that these small animals are as susceptible to contagious diseases, as are the larger animals.

That foot and mouth disease is widespread, in the territory where goat and sheep skins originate, I learned from a skin buyer who had recently arrived from Kalgan, Inner Mongolia. He said that the camel trains which are the main transportation in that country, were all infected with this disease. As these camel trains pack all manner of cargo, hides and skins included, for hundreds of miles, the wide spread of the disease is obvious. He could give me no information in regard to sheep and goats. Foot rot, scabies and mange attack goats and sheep at all seasons.

Horse, Goat, Cow and Human Hair

Horse and cow, also goat hair is the product of Mongolia, Manchuria, Shensi, and Shansi, and must be considered in the same class as Mongolian hides. It is obtained from animals that have died from any disease. The Chinaman saves the hair when he cannot sometimes save the hide, and it makes no difference to him what the animal died from. I would recommend that this product be subjected to the steaming or boiling process for at least 30 minutes instead of the present method of sprinkling with formalin 40 per cent pure, 3 ounces per case, or in the case of baled shipments that are exposed to the fumes of sulphurdioxid 4 per cent for 12 hours. Human hair is a filthy abomination. The Chinese as a people are the dirtiest and most filthy human beings that I have ever come in contact with, and they suffer with the same diseases that we have in United

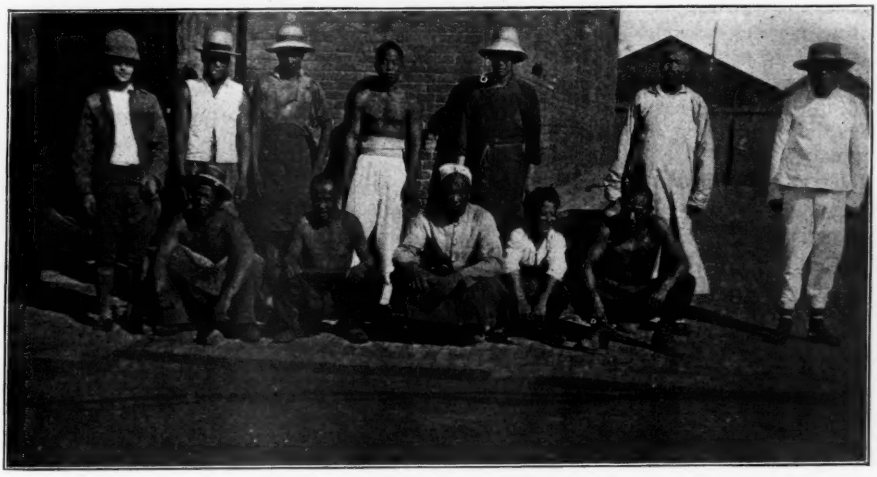
States with the addition of many more that we have not. For instance, there is the great Manchurian or pneumonic plague which visits them frequently, and takes its toll of thousands. Many thousands of heads are infected with syphilis ulcers, eczema, scabies, and dohbie itch, and many other diseases. This product should also be subjected to the boiling and steaming process, and in addition a good scouring with lye, soap and water would be in order.

Pig Bristles

To me it is doubtful whether pig bristles contain anthrax germs, although they are blamed for it. A pig is immune to most all diseases except hog cholera, swine plague, and erysipelas. When a man is infected with anthrax, through the medium of a shaving brush, the conclusion jumped at is the pig bristle contained the germs of infection. As a matter of fact, pig bristles enter very little into the manufacture of a shaving brush. They are too stiff, and only a sufficient number are used to obtain a proper amount of stiffening to the brush. The remainder or bulk of the bristles used is goat and horse hair. The source of the anthrax infection is therefore obvious.

Pig bristles in the raw state are filthy, but the filth is mud obtained by the pig wallowing in filthy, stagnant, stinking mud holes and cess-pools. Nevertheless, when they are used in the manufacture of shaving, hair and clothes brushes, they should be boiled or steamed, preferably the latter method, but at the factory.

Pig bristles generally arrive in Tientsin in the raw state. The black ones come from the territory of Mongolia, and Manchuria. The white ones are from Siberia. In the raw state, they come in small bundles tied round the center. They are then prepared by coolies who sort, comb and dust them. This is called dry scouring. They are finally graded into uniform lengths, and tied at their butts into nice looking bundles. A shipment of 55 cases would take 30 coolies at least one month to prepare. I have been continually visiting these bristle go-



Butcher, preacher, American soldier and coolie butchers for American troops in front of slaughter house at Tientsin.

downs, and have yet to hear of a coolie contracting anthrax. There is one coolie in particular, that I have observed for the last three years. It is his sole duty to obtain one bunch of bristles from each case of all shipments, and grade them into the different lengths, so as to check up on the quality of the shipment. This man takes a small portion of the bunch, bangs their butts on a level board, then with his thumb and index finger draws out the bristles Every time he draws out the bristles, he wets his thumb and finger on his tongue so the bristles will not slide through his fingers. He has been doing this work for three years to my knowledge, and dampens his fingers with his tongue possibly a hundred times a day, and he has not con-

tracted any disease whatsoever. This fact is worthy of consideration.

Miscellaneous Information

When cargoes of animal products arrive in Tientsin for preparation for export, it is impossible to state exactly where they originated, because contrary to the opinion that China is a thickly populated country, North China is very sparsely populated, and products are carted for miles from small centers to large centers until they finally arrive in Tientsin, and it must be remembered that North China is almost as large as the United States. Therefore, one shipment might be the product of a territory of several hundred square miles in extent. Considering the foregoing, it seems ridiculous to me that anyone should even think of certifying to the effect that any cargo is not infected with anthrax, rinderpest and foot and mouth disease, or that these diseases did not exist at the time and place of origination.

In Manchuria, the Japanese government has an experiment station where sheep raising is the principal industry. On two occasions during the last three years, anthrax has made its appearance among the sheep. I am unable to state positively whether any other contagious disease has been contended with, but I am of the opinion that rinderpest has. This station has a veterinary staff.

The following is an extract taken from a Reuter cablegram dated, London, May 2, 1919.

"In the House of Commons on May 2nd, 1919, Sir Harmar Greenwood moved the second reading of the prevention of anthrax bill, empowering prohibition of the importation of goods infected or likely to be infected with anthrax, compulsory disinfection of infected wool and similar goods and the establishment of state works for the disinfection of infected goods at the importer's cost.

"Sir Harmar Greenwood said that *despite all precautions*, the number of cases of anthrax in the wool and allied trades steadily increased. The bill was based on unanimous recommendations of a committee representing the trades concerned. An anthrax process for effectively destroying the anthrax germ without affecting the material, had been discovered and the cost of establishing the first disinfecting station was estimated at 40,000 pounds sterling. As soon as erected, the plan was to start disinfecting East India goat hair, which was one of the sources of infection. Australia and New Zealand had already stamped out the disease, and there was every reason to hope that the other dominions would prevent the export of infected material.

"The matter would doubtless be referred to the International Health Department which was being established under the auspices of the League of Nations. The bill passed its second reading."

The above legislation is a master stroke and will undoubtedly be passed and become law. It is well worth our duplicating, but we should add human hair, fowl feathers and in fact all external animal products. Until we get satisfactory legislation, contagious diseases affecting man and beast will be imported into our country through the medium of animal products indefinitely.

I am of the firm belief that Spanish influenza is a form of the Manchurian plague only in a mild state. As I see it, Spanish influenza is a disease of the lungs; in fact, you might call it an infectious pneumonia. So is the Manchurian plague, only it is much more virulent and acute. The patient suffering with the plague is dead inside of two or three days; there is no cure for it in China. Two years ago this plague visited North China, but fortunately it was confined to the territory outside the great wall of China. It took its toll of thousands of poor ignorant natives, and was fought chiefly by the missionary doctors, who worked night and day with everything against them. Spanish influenza is supposed to have originated in China and not in Spain.

I submit the above paragraph for what it is worth.

It is impossible for me to write a short report, of what is in my mind. I make an appeal to those in authority to quit playing with fire, enact legislation, appropriate funds, and build disinfecting plants on islands adjacent to the coast and disinfect all external animal products, human hair and fowl feathers that originate in Asia. Let us be done dilly-dallying with the numerous regulations, get down to business and handle this in a scientific manner, at home; then we will know that the produce is disinfected in the correct way.

Addendum

Before closing this report I desire to write a few words on what I have seen in regard to the shelling of walnuts which are also exported to the United States.

Walnuts are shelled by Chinese women and young girls. These people hardly know the meaning of soap and water. The only time Chinese females take a bath, is when they are admitted to a foreign hospital. It is compulsory for them then. One can imagine the stench issuing from a horde of fifty Chinese females from the age of seven to seventy years, squatted on the floor of a godown shelling walnuts. They have all the diseases that the human being is liable to. They bring their babies with them and in most cases the babies are infected with the smallpox, inoculated purposely by the mother, by scarifying the child's nose and rubbing it with the scab from a patient suffering with smallpox. There are absolutely no sanitary arrangements provided for these women, and the babies urinate and defecate on the floor where the nuts are. The floor of the godown might have been used between seasons for the storing or working of any cargo such as bristles, hides, skins or human hair, etc. The floor is simply swept clean, and the nuts dumped on it; the Chinese women squat with their babies alongside the nuts, and the shelling begins. The nut is cracked with a stick and the kernel extracted. If any part of the kernel sticks, the remainder of the shell is cracked with the teeth of the woman. They spit and blow their noses, with their fingers and hands on to the floor among the nuts and back go their slimy fingers to the nut shelling process. The finished article is thrown into a pile, packed in zinc-lined cases and labeled, "Choice shelled walnuts."

Clinical Aspects of a Fatal Disease Occurring at the Atlanta Stockyards*

By H. W. BURKLAND, D. V. M., Atlanta, Ga.

In discussing a fatal disease of mules and horses at the Atlanta stock yards and possibly other centers, I feel that my experience in the observation of numerous cases may be of benefit to other veterinarians. In view of the losses to the shippers and live stock dealers, its importance should not be underestimated.

During the shipping season, which is from September to March, in '17-'18 there came under my observation 63 cases with 55 deaths; during the season of '18-'19, 100 cases with 89 deaths—a mortality of 90 per cent.

Since mules are handled to a large extent at this market the disease appeared among them more often than in horses. A conservative estimate in value would be $250 per head, or a loss in deaths of $35,750. These figures, however, did not cover such factors as loss of customers, selling remainder of load to skeptical buyers at a sacrifice, freight charges from point of origin, interest on investment and other depreciation. A conservative estimate of the total loss would be $50,000.

The disease first came under my observation in November, 1917, at which time I was called to investigate by the agent of the L. & N. R. R. It was a carload of animals coming from Maryville, Tennessee, over the L. & N. R. R., watered and fed at a recognized feeding place enroute in the usual manner, and removed from the car the previous night at the stock yards for feed and water. The following symtoms were noted. My attention was first attracted to one dead animal showing no marks of violence or struggle prior to death. Three other animals were standing with ears dropped in a resting posture, showing a sluggish, dejected appearance which might casually be regarded as fatigue incident to journey. There was a complete loss of appetite, with occasional nervous movements alternating with rest. The pulse was rapid, weak in character, and imperceptible in more advanced cases. The cardiac disturbance was characteristic of all cases and used as a guide for iso-

*Read before Ill. Vet. Med. Assn., Champaign, Ill., July 8, 1919

lation and to determine the stage of the disease. The temperature varied from subnormal in advanced cases, to 105° F. in cases less pronounced. Mucous membranes were at first mildly congested increasing in intensity as the disease progressed to a cyanotic appearance.

The organs of mastication and deglutition were apparently normal, though occasionally the lower lip was pendulous. A profound thirst existed in some, continually washing their mouths, in fact, some dying with their heads in the watering trough. Diarrhea was a prominent symptom in the later stages, liquid in consistency and of a characteristic fetid odor. In some instances the animal showed colicky pains. Occasionally the nervous disturbance evinced itself by the animal's raising its head pricking up its ears and braying at varying intervals just prior to death.

Upon survey of the symptoms and history, I made a tentative diagnosis of some acute toxemia, cause unknown. Autopsy of the dead animals resulted negatively in so far as conclusive evidence of the etiologic factor or diagnosis of the disease. In a few days my attention was again called to two similar cases showing symptoms identical with the former, and from that time on during the remainder of the shipping season at intervals of two to ten days apart new cases made their appearance.

Its increasing frequency prompted me to call on the state veterinarian, and federal inspector who volunteered their services. At this time there were five available cases, and much time was devoted to making a thorough survey of the conditions under which the disease occurred and its possible cause. Symptoms were carefully noted, various influences considered such as condition of feed and water, environment, general condition of animals, origin, length of shipment and feeding places en route. Various medicinal agents were administered with apparently no response, as the disease proved fatal in most cases in from four to twelve hours from onset, rarely in forty-eight hours.

Autopsies were held and analysis of the contents of the stomach, and cecum made by the state chemist. In several animals observed the post mortem findings were not constant. A diffuse enteritis involving the lining of the large intestines was more pronounced in animals affected a longer period of time and especially in those animals which showed pains prior to death. The gross pathological changes in the organs and tissues, while suggestive of the general character of the disease could not be regarded sufficiently pronounced to suggest the etiologic factor involved. Analysis of the intestinal contents was reported negative in so far as any chemical poison was concerned.

Treatments were administered, such as various heart stimulants, intestinal antiseptics, purgatives, nuclein and biologicals, hypodermatically, orally, intrajugularly and via stomach tube, but none seemed to have any influence on the mortality. Recovery in animals showing fully developed characteristic symptoms was not observed. A few cases were detected upon removal from the cars, while in most instances the symptoms developed in from six to thirty-six hours after arrival. Animals that failed to develop the disease within forty-eight hours were regarded as having passed over the danger period.

In every instance the disease developed subsequent to journey which was suggestive of the possibility of the fatal agent gaining entrance to the animal through feed or water enroute or from infected cars, invading the system by virtue of exposure in transit. However, investigation gave no evidence of possible infection outside of the animal body.

Origin of shipments played no important part as they were shipped from various states, from small as well as large shipping centers. Number of animals affected in a carload varied from one to eleven. The disease did not confine itself to one part of the stock yards nor to one dealer. Each suffered losses in proportion to the number handled.

Our observations of the disease were sufficiently thorough to eliminate causes other than some bacterial agent, which phase I am not prepared to discuss, but has been considered by the Southeastern Department Laboratory of the Army.

An outbreak of anthrax among human beings was reported at Bay City, Texas, in September, three cases having been discovered. It is said to have been caused by a man skinning a cow which had died of the disease.

Endemic Goiter*

By HOWARD WELCH, D. V. S.
State Experiment Station, Bozeman, Mont.

Like the couple who named the baby Elizabeth only to find on its arrival that it was a boy, we are wholly unprepared to give a name to the disease under discussion. The investigation of the disease of hairless pigs which we undertook several years ago, turns out to be a disease not of the skin and hair, but a condition allied to goiter.

Dr. Plummer's classification of the goiters, viz: non-hyperplastic atoxic and toxic, and hyperplastic toxic and atoxic, serves very well to group the goiters affecting man, but we cannot classify this disease under any of these heads. Cretinism, either endemic or sporadic, really resembles our endemic goiter more closely than any other thyroid disease, but in a very large per cent of cretins the thyroid is functionally if not entirely wanting. Congenital goiter is really the term which describes our disease, or endemic goiter of the new-born.

In certain definite sections of all the northwest states and Canada, a varying percentage of the new-born of all domestic animals are defective at birth, being partly or completely hairless, retaining the fetal circulation, present the complete picture of myxedema, and are either dead at birth, or die shortly after. When I said all domestic animals, I meant that no species was exempt. The percentage of affected animals has never been determined, for obvious reasons. For some reason, the loss has always been heavy in new born pigs, and from the fact that these pigs were always hairless, the disease was first called to our attention.

After spending some time following false leads, we found the goiter to be a constant condition and from this we got the symptom complex of myxedema, and the idea of control by the use of iodin immediately suggested itself. To make a long story short, the use of iodin in the pregnant female has been an entirely satisfactory system of control and is now in extensive use in all the northwestern states.

*Read at the Montana Veterinary Medical Association, Butte, Montana, June 26-27, 1919.

The actual cause of the goiter and the explanation of the curious variations of the malady are not such simple matters.

We know that the function of the thyroid is to supply an internal secretion, without which normal metabolism cannot go on. The exact nature of this secretion is obscure, but a very plausible theory is that the secretion of the gland neutralizes toxic metabolic products which would otherwise prove harmful to the body. When for any reason the production of the secretion from a given number of thyroid cells becomes insufficient, the cells increase in number, and the circulation of the gland becomes more active, in order that the circulation blood may receive more of the colloid. Thus in most goiters we have a true hypertrophy, the function being kept up by the increased size of the gland, and no bad effects resulting except those of a mechanical nature, pressure on the trachea, etc. This goiter is typified by the goiters of adolescence in man, and dogs. In man we have another type of goiter, the hyper-plastic toxic, or exophthalmic goiter, in which the gland is not only enlarged but its cell activity is multiplied, and an over-production of secretion results in the varied symptoms of that disease.

In the endemic goiter with which I am struggling, we have neither of the above. We have a gland which has attempted by hyperlasia to compensate for the insufficiency of secretion but has failed utterly to do so, producing the general condition of athyroidism or cretinism.

We know that the fundamental source of the activity of the thyroid is iodin, found in the gland as thyroiodin. The percentage of iodin in the thyroid is almost instantly influenced by the administration of iodin either externally or internally. The iodin content can be raised and kept far above the normal by very slight amounts of iodin daily. With this in mind, we confidently expected to demonstrate a distinct shortage of iodin in the districts where the goiter cases abounded but signally failed to do so. Water, soil and agricultural products were

analyzed extensively but no results obtained which substantiated our "hunch".

About this time Hart and Steenbock of Wisconsin published a paper showing that sows fed on a ration composed entirely of concentrates with a minimum of roughage, would produce hairless pigs, but they made no mention at that time of the presence of a goiter. Later they published again, mentioning the goiter, and advising the use of iodin, attributing the condition, however, to extensive intestinal putrefaction from lack of roughage, and the inability of the normal thyroid to neutralize the excess of toxic by-products of protein digestion. I was somewhat skeptical about this, but the winter of 1917, in which, you will remember, the hay supply became exhausted, convinced me. That spring the hogs got no hay at all, and hairless pigs occured all over the state, entirely out of the so-called affected areas.

McDowell, of Ottawa, published a set of parallel experiments, attributing the hairlessness in Canada entirely to lack of roughage, and refusing to acknowledge the part played by the thyroid at all, or to advocate the use of iodin.

Now to revert back again, as they say, to conditions in Montana, there are areas where pigs absolutely cannot be raised without the use of iodin for the sows. In the valley of the Yellowstone, especially in and around Glendive and Sidney, and in all eastern Montana, practically every rancher has lost stock from this source. In the Wenatchee valley in Washington, the condition was so bad that the legislature made a special appropriation for investigation, and an equal amount was raised by the farmers. Such a condition is endemic, not sporadic, and not due to an unbalanced ration fed by some half baked stockman. Furthermore, investigation showed cases of hairless pigs where the sows had had nothing but alfalfa to eat.

It has long been known that certain spots in Europe were very productive of goiter, notably Switzerland. It has been largely attributed to water, and change of water, or boiling the water has indeed improved conditions. Experiments have established that either dialyzing or boiling water removes its goiter-producing power. Most of these experiments, performed some years ago, have been termed inaccurate by later day investigators, and McCarrison in particular, got some remarkable results by his experiments with infections originating in the intestine.

In 1915, Kalkus of Washington, working in the Wenatchee valley, apparently eliminated everything as a possible cause. Kalkus is now using iodin and getting good results, though he is as far from solving the question as ever.

It is evident to me that there must be in our affected areas in Montana, some agent accessible to animals which interferes with proper iodin assimilation, or the iodin present is not available due to some unusual chemical combination, or some agent is lacking which ordinarily assists in iodin assimilation; also that the goiter cases produced by Hart, and those cases brought on by improper feeding, are sporadic, not endemic, and have no bearing on the subject as affecting eastern Montana.

This shows what I consider a very good brood mare and her colt. She is owned by R. Schlofelt, Grandin, N. D.; age, 22 years; breeding—mother, Hamiltonian; father, French Coach; number of colts, 19; purchased by present owner when three years old in 1900 and has had one colt every year since. All her colts are strong, well built horses. G. H. Oakes. Hunter, N. D.

Dr. E. D. Modlin, having been discharged from the army, has resumed practice at his former location, Cambridge City, Ind.

Dr. Julian Howard, until recently in the army service, has located at Stanwood, Wash.

Dr. James S. Davis, recently returned from Camp Taylor, Ky., has located at Broughton, Ill.

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Meat Inspection Work of the Veterinary Corps

There is one branch of the veterinary corps of the army that has not received the attention from the public that the importance of the service rendered merits. We refer to the meat inspection division. No group of professional men in the army, excepting in the engineering division or the chemical division of whom we heard so much, performed a more important service, and perhaps none other so wholly escaped any criticism. Not a complaint has been made regarding the inspection of the army's food. This work was carried out by officers of the veterinary corps trained in Chicago under the direction of Major G. A. Lytle, who has spent many years in the meat inspection service of the army and is the senior officer in that division.

Over one billion pounds of meat and dairy products were inspected at purchasing points in this country during the war by the veterinary corps. Due to its professional qualifications in comparative pathology and knowledge of army requirements, one of the chief functions of this corps is to provide adequate and comprehensive sanitary inspection of all meats and dairy supplies procured for troops. This is necessary as a means of eliminating unsound, contaminated and decomposed meats or meat products, and those containing harmful parasites or disease producing or other undesirable bacteria, and to insure the proper preparation and sanitary handling of such foods.

The veterinary corps conducts meat and dairy inspection service in Europe, Siberia, China, the Philippines, Hawaii, the Canal Zone, Porto Rico and at the various camps and posts in the United States. The sanitary inspection of all packing house products procured in the United States and elsewhere through the zone supply system is also conducted exclusively by this corps.

In addition to the sanitary inspection of enormous quantities of meats and meat products purchased locally at camps and posts, the following products were inspected by the corps at purchasing points in this country from April 1, 1917 to March 31, 1919: 448,525,595 pounds of fresh frozen beef; 185,253,027 pounds of corned beef; 100,331,228 pounds of corned beef hash; 214,700 pounds of fresh mutton; 12,524,635 pounds fresh pork; 296,864,734 pounds bacon; 19,007,921 pounds ham; 26,412 pounds deviled ham; 4,000 pounds salt pork; 4,942,504 pounds pork sausage; 2,196,628 pounds lard; 45,000 pounds lard compound; 8,370,038 pounds lard substitute; 6,144,405 pounds Vienna sausage; 15,382,303 pounds oleomargarine; 8,811,026 pounds cheese, 8,522,689 pounds butter; 2,137,699 pounds frozen turkey and 72 pounds chicken.

In addition the veterinary corps inspected 31,454,566 pounds of meats for the civilian relief work in Europe and 976,687 pounds of fresh frozen beef for the Italian Government.

Dr. R. A. McIntosh, formerly of Morden, Manitoba, has accepted a position on the staff of the Ontario Veterinary College at Toronto.

VETERINARIAN BECOMES MINISTER OF AGRICULTURE

Dr. S. F. Tolmie, M. P., who represents the city of Victoria, British Columbia, in the Canadian House of Commons, has recently been appointed Minister of Agriculture for Canada.

His appointment to the portfolio of agriculture has met with general approbation throughout the dominion, and his many friends south of the international boundary will join with Canadian agriculturists and veterinarians in congratulations.

He has long been associated with the leading organizations working for the advancement of the live stock industry in Canada and the improvement of the veterinary profession. In these two fields he has made intimate friends all over America, who will view his appointment as a well merited promotion, and an opportunity for him to give still further assistance and guidance to the agricultural industry.

Dr. Simon Fraser Tolmie was born January 25th, 1867, at Victoria, B. C., the son of British parentage. He was educated at Victoria High School and at Ontario Veterinary College, where he received his degree in veterinary medicine and surgery. As chief inspector for the Health of Animals Branch in Britsh Columbia and as president of the British Columbia Veterinary Association, Dr. Tolmie has been in close touch with farming and with live stock needs from a health point of view, but he has served in a much larger field, for at the time of his appointment he was president of the Western Canada Live Stock Union, the Canadian National Live Stock Council and the Holstein Friesian Association of Canada.

Dr. Tolmie's efforts in a public way combined with actual farm experience (for he is owner and proprietor of "Braefoot" Farm where he makes his home near Victoria, B. C.), should equip him admirably for the task in hand. In fact no minister has accepted a dominion portfolio with a broader knowledge of the industry at the time of his appointment. The new minister knows his field well and his success will depend quite as much upon his ability to impress his colleagues with the importance of agriculture, as to oversee the activities of his various branches.

Dr. Tolmie is the first member of the veterinary profession to occupy a cabinet position in Canada, and it is very gratifying to find the profession receiving recognition in this way.

RECEPTION OF COL. MERILLAT BY THE SOCIETE CENTRALE DE MEDICINE VETERINAIRE, PARIS, FRANCE.

(Translated from the Recueil de medicine veterinaire, April, 1919.)

President's address:

"In the name of the Societe centrale de medicine veterinaire I have the honor to welcome a delegation of our American confreres at the head of which the Government of the United States has done well to place Professor and Major Merillat of Chicago. The society gentlemen receives you with joy and with the simplicity of a family celebration. You can be assured of finding here, for yourselves and your country, a reflection of the whole veterinary profession of France.

"Here like in all other centers of national activity the role of the United States in the war that has just come to such a glorious close, has been highly appreciated. The disinterestedness, the love of justice and right, the ardent desire to enjoy the liberty for which we have already fought by your sides, have been the levers of your intervention. You have engaged in the most formidable of wars with the well formed intention of imposing our common will upon an enemy without scruples and for whom law is nothing more than the glutting of its ferocious appetite. Nothing has disheartened you and thanks to your young and generous blood shed in common with ours, victory has crowned our efforts.

"It is now on the labors of peace that we must concentrate our efforts and nothing more properly exposes the proposed program than this mission you represent sent here for the exchange of ideas and the comparison of methods.

"The Societe centrale de medicine veterinaire which flatters itself with being the representative of the veterinary profession of France, now honors itself by honoring you our confreres of free America. I assure you that in no place will you find hearts more vibrant with gratitude and enthusiasm for your beautiful country than in the midst of our society."

Response of Major Merillat:

"Mr. President and colleagues. I regret very much that I have not sufficient command of the French language to reply in suitable words to the sentiments, Mr. President, you have just addressed to the American people and to tell you how grateful I am for this reception.

"Assure yourself, however, Mr. President and colleagues, that it is a great privilege for me to meet with you, to find myself in personal contact with confreres I sincerely admire and whose works it has been my good fortune to follow throughout my whole professional career on another continent, and finally to address to you and to all the veterinarians of France expressions of sympathy of the American veterinarians. As a citizen of the United States, as an officer of the American Army and as a member of our national association, I thank you all from the bottom of my heart for this spontaneous display of staunch friendliness.

"Words are too feeble to express my sentiments for you, men of valor, veterinarians of the highest rank, and citizens of a country we love best after our own. The patriotism you have shown during the past four trying years and the activity you now display in resuming the labors of civil life during the period of reconstruction are qualities the veterinary profession of the whole world will admire and to which I now desire to pay tribute.

"Let us hope that as a result of this war the relations of the veterinary profession of France and the United States will become closer and that they will develop into a more perfect and permanent mutual understanding. Although the sacrifices of war are never entirely compensated, let us hope that the fruits of immortal friendship, born of this better acquaintance with each other, will not be lost to us.

"Permit me also to take this opportunity to suggest the United States as the next meeting place of the International Veterinary Congress, and that the meeting be held without undue delay in order that the work interrupted by the tragedy of 1914 may be resumed.

"With assurances of my profound respect and admiration, Mr. President and colleagues, I again thank you."

TUBERCULOSIS ERADICATION CONFERENCE SHOWS NATION-WIDE INTEREST IN DISEASE FREE HERDS

As had been announced, a conference of the Bureau of Animal Industry veterinarians, particularly of those in the tuberculosis eradication division of the bureau, state veterinarians, livestock sanitary officials and others interested in the control and eradication of tuberculosis among cattle and hogs, was held in Chicago, October 6, 7 and 8.

With live stock and their products on a higher plane of values than in previous years there has come to stockmen and farmers a keener realization of the need to stamp out animal diseases. This important development in live-stock raising was shown repeatedly at the conference.

Whereas in the past the unwillingness of cattle owners to have their herds tested in order to locate the disease has been a limiting factor in the work, now there are waiting lists, and the problem confronting state and federal officials is to meet the demands. Coupled with that problem is the need for improved methods of testing and a more uniform system of certifying to the health of animals so that stock may be shipped interstate with a minimum of inconvenience and delay.

First Conference of Its Kind

The conference, called by the Federal Bureau of Animal Industry to discuss these problems, was the first of its kind, and 158 delegates from various parts of the country were in attendance, about forty states being represented by the State Veterinarian or State Live Stock Sanitary commissioner or both. In opening the meeting Dr. John R. Mohler, chief of the bureau, emphasized the importance of conducting disease eradication in a manner that is practical and workable as well as being scientifically correct. Likewise he announced the desire of the Federal Government to receive information from all sources to supplement the work of U. S. Department of Agriculture investigators. A problem of considerable importance is the tuberculin testing of cattle at public stockyards. Such testing is aimed to check traffic in diseased animals and to protect communities which have little bovine tuberculosis from infection by cattle that

are diseased or of doubtful health. This condition applies especially to dairy stock and to breeding cattle, but in preventing interstate movement of tuberculous animals, live-stock sanitary officals recognize the need of doing the work in the most expeditious manner.

Discuss Merits of Tests

In addition to the subcutaneous test, which has been the most widely used in detecting tuberculosis in live stock, two other tests—the intradermal and ophthalmic—received close study and discussion. The intradermal test, in the experience of many of the delegates, is especially useful in testing range cattle and those which are unaccustomed to handling. It has a field of usefulness, likewise, in very hot or cold weather when the atmospheric temperature makes difficult an accurate diagnosis with the subcutaneous test, which depends on a series of animal-temperature readings.

The ophthalmic test is another means of diagnosing tuberculosis. The eye test thus far has been used chiefly either in combination with the other tests or as a means of obtaining further evidence on suspicious cases. The discussion indicated the usefulness of all three tests in detecting tuberculosis in live stock, and when used in combination the tests appear to be an almost unfailing means of diagnosing the disease. As a supplement to the conference, experimental testing by the three methods was conducted at the Union Stockyards.

Accredited-Herd Plan Endorsed

Delegates from all parts of the country reported keen interest in their localities in the so-called accredited-herd plan, under which the Federal and State authorities grant a certificate to owners of herds found to be free from tuberculosis and which are maintained in a prescribed manner. The principle of the plan was warmly endorsed as a constructive means of tuberculosis eradication, and the conference favored its continuance along present lines or with additional requirements that will increase its effectiveness. A topic receiving special emphasis was the need for painstaking and thorough disinfection of premises where disease has been found, followed by continuous attention to sanitation of buildings and surroundings.

Tuberculosis in Swine

Eradicating tuberculosis from cattle will practically solve the problem of controlling the disease among swine. That was the opinion of veterinary experts experienced in the handling and postmortem examination of swine received at the principal market centers. By means of a simple and practical marker, hogs may be tattooed with distinguishing letters and figures, and when disease is found by postmortem examination, the identity of such animals is known. With a simple system of records it is thus possible to trace a shipment to the farm from which it came and stamp out infectious diseases at this source. The evidence submitted showed that swine become infected with tuberculosis, principally from cattle, either by following them in feed lots or pastures, by receiving infected dairy by-products or by eating tuberculous carcasses. In addition there are numerous other but less common methods by which swine contract tuberculosis.

Officials Insist on Thorough Work

The discussions revealed a wide difference of conditions and problems, many of them intricate, but there was unanimous agreement on the main topic—to eradicate tuberculosis from live stock throughout the United States and to do it at the earliest possible time. Farmers and stockmen of the country virtually have set a pace in their demands for testing that is faster than was anticipated a few years ago, but the live-stock sanitary officials are not to be outdone. The Federal Bureau of Animal Industry is now producing about three times as much tuberculin as a year ago, and it is being distributed free to Federal, state, county and municipal officials. Those in charge of the work in different states recognized that the present progress is but a beginning, and to avoid confusion there must be uniform policies and methods. They stressed also the importance of doing the work thoroughly and well, so there will be no reaction and loss of confidence.

The tendency in tuberculin testing was plainly away from the large doses of tuberculin that have been gaining in favor during the past two or three years, particularly with the bureau employees. It seemed the consensus of opinion that doses of 10, 15, 20 c. c. of tuberculin and

larger were unnecessary and if not harmful, at least wasteful. This is important considering the large amount of tuberculin now required for legitimate needs and the difficulties encountered in its preparation. Many seemed inclined to believe that the use of more than 10 c. c. of tuberculin, even in cases that had given a suspicious reaction previously, was unwise and lessened the chances for accurate results in that and succeeding tests.

Many problems in connection with the interstate shipment of cattle and the furtherance of the tuberculosis-free accredited herd plan, were thrashed out, and many misunderstandings cleared away. On other matters nothing like agreement was reached. Among the more conspicuous of the latter is the problem of getting range or feeder cattle from the yards for feeding purposes without allowing certain classes of these and other cattle to be shipped out of the yards under permits for feeding and later to be sold with the consequent wide dissemination of tuberculosis among dairy animals.

Dr. Mohler's Address

Dr. Mohler in his splendid opening address dealt fully, yet concisely, with all matters to come before the conference. Concerning matters connected with tuberculosis eradication in which the practitioner is particularly interested and concerned, he said:

"This work has grown faster than was anticipated. It has not developed because you and I have been associated with it or because of any act of congress or state legislature, but because it is a worthy work that has merit as its foundation. That is the only kind of work that will succeed in the long run and it is the only kind that we should be associated with. The accredited herd plan is not without room for improvement. Nobody believed at the time of its inception that it was beyond further perfection. It is, however, a practical plan, a workable plan and a plan popular with the live stock owners who are familiar with it. One of the objects of this conference is to develop ideas for further perfecting it.

"A feature of the plan which has been largely discussed is that part of paragraph one which provides that the test shall be made under the superivision of the Bureau of Animal Industry or a regularly employed veterinary inspector of the state in which cooperative tuberculosis eradication work is conducted jointly between the United States department of agriculture and the state. Some people have maintained that the plan is wrong because it does not recognize tests made by private veterinarians. As you know, this subject was thoroughly discussed last December in committee room, and in open session of the United States Live Stock Sanitary Association, but the original plan was not changed in this regard.

"The members of both committees and the membership of the sanitary association have every reason to be proud of the achievements of the veterinary profession at large in the United States. The work that the profession has done in the control and eradication of infectious diseases of animals stands as a monument to their ability, their qualifications and their integrity. The Bureau of Animal Industry, which is largely composed of veterinarians, has the highest regard for the ability and the splendid cooperation of the private veterinarians of the United States. They are not recognized to test cattle for the accredited herd plan, but it is not because the overwhelming majority of them are not considered capable; it is for the reason that the State government and the United States Department of Agriculture are called upon officially to pronounce herds of cattle free from tuberculosis and to certify that they are free, and in carrying out the functions of the Bureau of Animal Industry it has adhered to the plan of doing the work assigned to it by Congress with regularly employed inspectors who are under rigid discipline and who are maintained in the service because they carry out instructions implicitly.

"Private veterinarians have been testing cattle for interstate shipment for many years. They have been instrumental in eradicating a considerable amount of tuberculosis and have prevented its further spread by withholding from interstate shipment animals that responded to the test. We must be cognizant of the fact, however, that not all the testing done in that manner was satisfactory and that many cattle shipped interstate on certificates have been found to be diseased upon early retests. There are numerous instances on record of shipments of large numbers of cattle upon certificates, which on the face of them were records of bona fide tests, but upon subsequent revelation they must be pronounced fictitious.

"Having such thoughts in their minds the members of the purebred breeders committee demanded that whatever action was taken in the accredited herd work, it should be of an official nature and that the tests should be made by representatives of the state or the bureau whose tenure of office depended upon reliable work.

"The bureau has no apologies to make for the attitude it took in approving the accredited herd plan. It maintains that when it approves

of work it must have unqualified evidence that the work has been efficiently performed.

"Everybody connected with this work recognizes the fact that it is one of the most gigantic undertakings launched anywhere in an effort to exterminate an infectious disease of live stock. We are reasonable in expecting success from the enterprise. To make it successful, however, requires that the work shall be standardized; that it shall be performed in the most efficient way possible and that the live stock owners and the managers of herds must earnestly cooperate and must be interested in cleaning up their individual herds. The responsibility for success rests upon their shoulders to a larger degree than it does upon the live stock sanitarian.

"The bureau has maintained since the beginning of the campaign that in order to make satisfactory progress the services of all qualified and efficient veterinarians in the United States should be secured. As an indication of that idea a plan was suggested at the 1918 meeting of the United States Live Stock Sanitary Association, to turn over to selected private veterinarians herds which were officially accredited. The plan suggested is as follows:

"After a herd becomes accredited and is maintained on the list for a definite period, it should be turned back to the owner who will agree to employ a private veterinarian to conduct the annual tests and, also, to test additions to the herd. The herd shall remain under state and Federal supervision. At the state office a list of such herds should be maintained and a date set when the annual test shall be made; also the name of the approved veterinarian who is to conduct the test. The state and the bureau should reserve the right to have representatives present to review the annual test whenever they deem advisable. In that way an officially accredited herd may be turned over to the private veterinarian who will conduct the test for one year or two years or a longer period of time, but at any annual test his work may be checked up by an official of the state or the bureau, or both.

"As a further manifestation of the desire of the bureau to use the services of private veterinarians a provision was made in Regulation 7, which became effective July 1, 1919, requiring what cattle for dairy and breeding purposes shipped interstate shall be tested by a veterinarian, certified by the state live stock sanitary official where he resides and approved by the bureau. Up to the present time several thousand veterinarians have been approved for that purpose.

"In reviewing the work done by these certified veterinarians, it has been found that a few are not qualified to test cattle. They do not understand the action of tuberculin or the technic of applying the test. There are, also, those, but I am glad to say only a few in number, who have demonstrated that they cannot be relied upon to make such a test. The work of others leads us to believe that they are either not qualified or they are not honest in applying the test. Such cases are being investigated and as rapidly as evidence can be secured against such men, their licenses will be cancelled which action has already been taken in several cases.

"In this connection it should be stated that all those practitioners who have been certified thus far are graduates of veterinary colleges which have been officially recognized by the United States civil service commission, the war department, and the department of agriculture. It was necessary to draw the line somewhere, so the plan already in existence was followed. There have been several veterinary colleges which were not conducted in accordance with the approved standard of veterinary education, but which have produced some outstanding practitioners, who are now knocking at our doors for recognition to do interstate testing. Shall these men be admitted and if so, under what conditions? If the outstanding graduates of one such institution be recognized, shall we accept similar outstanding men from veterinary correspondence schools and also those from the great school of practical experience who have never had the advantages of any kind of college training? I shall appreciate a frank expression of your views on these and other related problems.

"At this time the demand for tuberculosis work is greatly in excess of the force available and this applies not only to the bureau, but to the force in any state. We anticpated that congress would provide $2,000,000 for the present fiscal year for the work, but we were disappointed as congress saw fit to appropriate $1,500,000 and then provided that $1,000,000 of that amount should be used only for paying indemnities. From present indications less than one-half of that amount will be used for indemnifying owners, whereas the $500,000 provided for operating expenses is entirely inadequate to keep pace with the demand for the work. I hope that this matter will be remedied in the next appropriation bill. The aggregate amount available for tuberculosis work in the various states for the present year exceeds $2,000,000. This is a most excellent showing and indicates that the live stock owners at large appreciate the efforts of the state officials in assisting them in the extermination of tuberculosis.

"The program for this conference was prepared with the thought in view of developing the constructive views of those present respecting the salient features of the work, and for the purpose of obtaining greater uniformity of

(*Continued on Page* 564)

DEPARTMENT OF

BOVINE PRACTICE

Edited by JOHN FRANCIS DE VINE, D. V. S.

Acute Endometritis

Infections of the uterus until comparatively recently were thought of principally as being associated with the act of parturition and subsequent infection, either as the result of a decomposing fetus or afterbirth, or being infected by manipulation either with hands or instruments. While these agencies do play an important part in uterine infections, still more recent information would lead us to believe that in most instances the acute infection associated with decaying membranes or occassioned by their manipulation, in an attempt to remove them, is more often an aggravation of a venereal infection by the Bang virus and other pathogenic organisms producing changes similar in character and behavior to the disasters in the human family occasioned by the gonococcus infection.

The infection may involve only the mucous membrane of the uterus which would constitute simple acute endometritis, but it is questionable if simple acute endometritis is clinically diagnosable in the cow. It either passes on to the chronic state of which we will speak later, or the infection extends to the muscular walls, which is defined as metritis; or possibly the peritoneal covering of the uterus, constituting metro-peritonitis. The different terms serve the pathologist better than the practitioner, except that it does convey a more definite idea of the intensity of the infection.

Endometritis of animals as well as many of the allied pathological conditions of the generative tract has received more attention perhaps during the past decade than in all time previous; consequently, we should not be surprised in reading the works of authors on these subjects if we find considerable diversity of opinion as to their importance, methods of treatment. etc.

If we refer to authors on genital infections in human medicine where these ailments have given them occasion to specialize on the study of genito-urinary diseases for centuries, we will find even these authorities differing on some phases of the subject, but all writers on human and comparative medicine seem agreed that very few puerperal infections occur without involvement of the endometrium, since the cervix and the endometrium are the ports of entry to the parametrium. Serious infection of the endometrium occurs most commonly during the period of pregnancy. Either the gravid uterus or the fetal tissue seems to form the necessary and ideal medium for bacterial activity. However, serious infection of the endometrium may be the result of puerperal sepsis or an endometritis that might have been comparatively mild were it not intensified at the end of gestation. The endometrium is at this time in a peculiarly exposed condition owing to the denudation resulting from the separation of the placenta, the patency of the cervix and the general vascularity of the parts. It is said that in the human family outside of the puerperal state, infectious endometritis is astonishingly uncommon and that with the exception of acute infections of puerperal sepsis it is not a disease requiring specific treatment except in unusual instances.

Some writers on sterility are of the opinion that endometritis plays an important part in sterility and consequently the treatment for the relief of sterility should be directed toward the relief of this con-

dition with the hope in turn of regulating conception and uninterrupted gestation.

My obstetrical experiences with the cow gives me views quite in harmony with this teaching. This being so, the time when acute endometritis needs attention and when results may be expected from proper treatment, is immediately following parturition or the ending of the puerperal state. Let the endometritis be simple or involve more of the uterine structure, the treatment will be very much the same.

We have said that we believe that endometritis either acute or chronic is largely dependable upon the infection of the Bang virus *and other organisms.* Clinical observations seem to demonstrate this belief in that an infected uterus usually develops an acute endometritis and may and often does fail to give suitable implantation to the embryo so that it with its coverings may be expelled anywhere from a few weeks up to three or four months.

It is likewise generally recognized by experienced workers that, where infected uteri do give nourishment to the embryo, and it is carried five, six, or seven months or even full term, evidence of uterine infection is manifest in an intensity varying from an endometritis, cotyledonitis and placentitis to a metritis or metro-peritonitis and is usually attended with the retention of the membranes.

When we consider that an acute endometritis neglected, frequently invites metritis, metro-peritonitis, pyometra, chronic endometritis, salpingitis, ovaritis and subsequent abortions, irregular breeding or sterility, it would seem that the vulnerable point in this cycle to be attacked is shortly after the expulsion of the fetus.

Mild or localized endometritis is comparatively unimportant and in the strong physical animal is usually overcome without any interference or assistance.

Schroeder and Cotton seem to have demonstrated rather conclusively that the non-gravid uterus does not harbor the Bang organism for a period longer than two months after parturition and possibly a much shorter period.* Hence the offending or irritating agent ceasing its activity, the normal uterine secretion in due time takes care of itself, providing the inflammatory processes have not been severe enough to produce such serious pathological changes in the uterus or the adjacent organs as to inhibit conception; or if conception does take place, the changes in the endometrium being of such a character as to make the uterine cavity incapable of carrying to full term a fetus of a subsequent conception.

Since it seems to be quite agreed that the non-gravid uterus is not the natural habitat for the Bang organism, it brings up what at the present time would seem a rather confusing situation.

If the Bang organism is the sole cause of abortion and a cow after aborting were to be kept absolutely isolated for a period of six months or more and then served by a bull that is cared for in every sanitary detail and the cow conceives, but promptly aborts again, what is the explanation? I have known of such cases.

Some are of the opinion that the uterus after conception is re-infected from the udder which so frequently harbors the Bang organism at all times. Others believe that the Bang organism is not the sole cause of abortion but that abortion is rather due to a mixed infection as in the case of wound infection and that infection takes place per vagina and that after a healthy uterus is sealed the danger of further infection is past, while still others are quite positive that the cow is infected by the digestive tract only and therefore that infection in this manner may occur at any time during the period of pregnancy. Any opinion I may have on the matter must be based largely on reasoning from clinical experience.

If the pregnant cow is infected or re-infected from the udder, then I would be willing to concur in the opinion that the Bang organism is the sole cause, but my experience makes me doubtful at the present time, since I have data of 37 herds numbering 1,110 animals in which first abortion ran in some herds as high as 47 per cent and by sanitation and proper cleansing of the uterus after abortion, and subsequent attention to the vagina in herds where this method was followed faithfully, we have kept down re-abortions as low as no per cent in some herds, and in no herd did re-

(*Continued on Page* 566)

*The report of the New York State Veterinary College 1912-13, page 89, found the Bang organism in the uterus of a cow eight and a half weeks after abortion.

DEPARTMENT OF

SWINE PRACTICE

Edited by A. T. KINSLEY, M. Sc., D. V. S.

Sanitation in the Swine Industry

The importance of the swine industry in the United States is not fully realized by the veterinarians. It was estimated that over seventy-one million hogs were on farms in the United States on January 1st, 1919, and they were valued at more than one and one-third billion dollars. There is an extensive demand for fat, of which the hog is the principal source and this should be sufficient grounds for an increase in the number of these animals. The agriculturalist has demonstrated that the hog is the most economical means of marketing, not only corn, but other crops that are grown extensively in different sections of this country. Many hog producers do not realize the importance of swine and swine production, or at least they have not shown their appreciation by the proper care of these animals. Some veterinarians apparently do not realize the necessity for sanitary surroundings for swine. Many still consider that anything is good enough for swine.

Nature did not provide swine with a coat of hair or wool to protect them against extreme weather conditions. Their thin coat of bristle is insufficient protection, particularly in the little pigs, to insure health and survival amid conditions arising from undue exposure, and because of this lack of nature's coat, it is necessary to properly house them.

The prime requisite of successful hog raising, is the provision for safeguarding the little pigs. Pigs are usually farrowed in the corn belt, during March and April. A large percentage of farmers depend upon farrowing sufficient pigs to consume the crops raised upon their farms. A few corn growers buy feeder pigs in the place of attempting to raise their own. On most farms the raising of pigs is more economical than the purchasing of feeder pigs. Recent regulations for interstate shipments of properly immunized feeder pigs will be a stimulus to pig raising, particularly in the sections of the country that have not previously found feeding of hogs profitable.

The veterinarian is frequently called upon to give advice relative to the construction of hog houses, including materials, construction, location and general sanitary surroundings. We, as a class of professional men, must make a more thorough study of the problems of housing domestic animals, and we wish to call attention to the fact that ventilation has not been given proper consideration in the building of hog houses. It is known that little pigs are relatively delicate and are subject to the action of draught, and the sucessful breeder is the man who has his hog house so constructed that his pigs can be kept dry and warm, away from draughts, and amply provided with fresh air.

The subject of ventilation of hog houses concerns the breeder in the corn belt and the northern part of the United States and Canada more than it does the breeder of the south. Just how the hog house shall be ventilated depends entirely upon the type of house. In a well ventilated hog house, the wall and window will remain practically dry even in cold weather. The double hog house with a center hall is the most economically constructed, per pens. These houses should have north and south exposure. However, the north pens of such a house are not of much value in the fall and winter in the northern sections of the United States and in Canada. Houses can be constructed in which the pens are on the south side only and in which a hall extends along the north side of the pens. The individual farrowing pens are preferred by some breeders. They are relatively economical and if properly constructed are easily and readily moved and can be efficiently ventilated. In the construction of the double hog house or one-half of the double hog house, for colder climates, it is advisable to make an offset in the roof, in order that windows may be placed in such a position that the pens will be amply lighted. This also provides a means for ventilation. A second row of windows should be provided in each side of the hog house. The bottom of the windows should be about 3½ feet above the floor and hinged at the bottom so they can be lowered from the top. In the individual hog houses, hinged windows should be placed in the end and a ventilator above. Exhaled air contains more impurities and other excretions con-

taminate the air with injurious gases. If frequent exchange and renewal of air is not provided, the animal becomes sluggish and more susceptible to disease.

Improper ventilation is responsible for the loss of hundreds of pigs annually. Damp, musty pens with contaminated air diminish the pigs' resistance and they become affected with pneumonia, which is usually fatal. Improper ventilation also favors the maintenance of the germs of hemorrhagic septicemia or swine plague, B. necrophorus, and is conducive to the life of animal parasites, thus further endangering the life of the recently farrowed pigs. With the proper means of housing and especially if hog houses are properly ventilated, the production of our pig crops can probably be increased ten per cent, which will in turn insure an increased income, not only to the hog producers but also to the veterinarians.

The swine department of the AMERICAN JOURNAL OF VETERINARY MEDICINE will be glad to have inquiries relative to the construction of hog houses, and also suggestions as to new and better means of ventilation.

PORCINE INTESTINAL PARASITES

The intestines of swine are commonly inhabited by several different kinds of parasites. Such parasites are much more prevalent in young pigs than in older hogs, but because of the mode of eating and the habits of swine, it is exceptional to find even an old hog entirely free from intestinal parasites. The amount of injury that the parasites inflict upon their host depends upon the type of the parasites and their number. The following indicates the specific manner in which the intestinal parasite injures swine:

1. Direct absorption of digestive nutrients in the bowel.
2. Obstruction of the lumen of the intestine or the bile duct.
3. Injury to the mucous membrane of the bowel, either due to movement or injury by the attachment of the parasite.
4. Injury due to poisonous substances liberated by the parasite and which, when absorbed, produce nervousness and sometimes destruction of the blood.

There are at least five different kinds of parasites that inhabit the intestinal tract of swine. They are the Ascaris suum, the Gigantorhynchus hirudinaceus, the Trichocephalus crenatus, the Esophagostoma dentatum and the Trichinella spiralis.

The Ascaris suum is the common parasite that is frequently observed in large numbers. This particular parasite does not attach permanently to the mucous membrane of the digestive tract. It has a tendency to accumulate in considerable numbers, thus producing obstruction of the intestine and when such is accomplished it frequently results in the death of the animal. These parasites may by their movement pass into the bile duct, resulting in serious disturbance to their host.

The Gigantorhynchus hirudinaceus is so called because of the fact that its head is provided with several rows of hooks. These worms may obtain a length of eight or ten inches; the body wall shows transverse markings, and the tail is attentuated. A beetle is an intermediate host of this parasite. In other words, a portion of the life cycle of this parasite is passed in the beetle. This parasite firmly attaches itself into the mucous membrane of the intestine and the injury caused by the thorns provide an avenue for entrance of various germs. This parasite, like the Ascaris suum, obtains its nutrition primarily by absorption from digested nutrients in the hog intestine.

The Trichocephalus crenatus is so called because of the fact that its shape is similar to the old fashioned black snake whip, the head being very thin and hairlike, and the posterior extremity being thicker. They vary from one to two inches in length. These are powerful blood sucking parasites but fortunately they are not so prevalent in this country as are the two former types.

The Esophagostoma dentatum is so called because of the fact that during a part of its life it remains embedded in the wall of the intestine and produces a nodular condition. These parasites cause little trouble, although they are more or less prevalent in this country.

The trichina is not a very important intestinal parasite, but during one stage of development it meanders through the tissues of the body, locating in the muscles and when consumed by the human produces the disease known as trichinosis. This particular disease will be more fully discussed in a later issue.

The symptoms produced by the intestinal parasites vary and depend upon the nature of the parasite and the number inhabiting the host. Small numbers of ascarids usually cause mild digestive disturbance indicated by unthriftiness. Large numbers of these parasites may produce an obstruction of the bowel resulting in chronic pain and usually death. Jaundice results from obstruction of the duct from the liver and this in turn causes marked digestive derangement evidenced by diarrhea and, unless the condition is relieved, death of the animal.

In rare instances, ascarids will perforate the bowel and establish a fatal peritonitis which will be evidenced by marked pain, tucked abdomen, the animal grunting with each breath and death usually within two or three days.

The symptoms produced by the Gigantorhynchus hirudinaceus are very similar to those produced by the ascarids. The symptoms are usually not well defined in cases infested with the Esophagostoma dentatum, as the damage produced seems to be of slight consequence.

The Trichocephalus crenatus by abstraction of blood and destruction of blood causes a marked

unthriftiness, the animal becomes weak and thin and in spite of wholesome food in large quantities becomes weaker and unless relieved will die as a result primarily of these parasites.

The presence of ascarids is not difficult to determine in a bunch of swine, as some of the swine will pass the worm out in fecal matter. The Gigantorhynchus hirudinaceus is rarely observed except in cases of autopsy and their presence is indicated primarily only by the symptoms previously discussed. The positive identification of the Esophagostoma dentatum and the Trichocephalus crenatus can be effected only by an autopsy.

The treatment of intestinal parasites is not difficult if one is positive of the type of worm that is causing the trouble. The Ascaris suum and the Gigantorhynchus hirudinaceus absorb nutrition direct from the content of the bowel of the hog and some agent such as the charcoal mixture prescribed by the government might be used with fairly good success. In recent years specific types of medicaments have been compounded for the different conditions in swine, and we would advocate that when specific parasites are observed by the veterinarian, he should prescribe specifically for those cases. General sanitary surroundings should be maintained, keeping the excretions of the swine cleaned up and removed from the lots, providing drainage so there are no stagnant pools, and the parasites of swine, like those of other animals, will be materially diminished.

A large number of anthelmintic capsules are being administered to swine by the practicing veterinarians. A few cases have come to our notice in which the veterinarian had used the balling gun with the capsules through the diverticulum of the pharynx, resulting in serious trouble, and it would be advisable for all veterinarians who have not given capsules to swine to study the pharynx of the first swine that presents itself for autopsy, and should any of the readers of this Journal have information on especially valuable medicaments for the expulsion of parasites from swine or any new phase of administering, we shall be glad to hear from you.

POSTERIOR PARALYSIS IN PIGS

Many inquiries are received relative to a condition in swine, in which they appear to become paralyzed in the back or hind legs.

This condition prevails in all kinds of swine, regardless of age, breed and their condition. It appears in swine in all sections of the country. Fortunately, it is not, as a rule, epizootic.

The first symptoms of this disease usually consist of an uncertain or wabbling gait. However, it is sometimes not observed until the animal is down and unable to get up. When such animals are helped to their feet they are unable to stand on their hind quarters, although some of them will walk around in the lot on their front feet, dragging the hind legs. Such affected animals usually have a good appetite, but in spite of the fact that they may be given the most nourishing foods, they gradually lose flesh and will ultimately die as a result of secondary complications.

The cause of this condition may be due to inbreeding, tuberculosis of the bones, disturbance of the nerves, parasitic invasion and malnutrition. There has been no direct tissue change found in paralyzed hogs in which the condition has resulted from inbreeding. Tuberculosis is relatively common in swine and is frequently produced by feeding of milk from tuberculous cows. In other instances, the tuberculous infection is picked up in the manure of tuberculous cattle. Paralysis due to tuberculosis of the bone or related structures usually occurs in swine weighing 100 lbs. or more and is incurable. A tuberculin test may be applied to affected swine to determine whether or not the animals are affected with tuberculosis, and if they are found to be tuberculous, they should be properly disposed of. Paralysis due to disturbance of the nerve tissue, perineuritis, usually occurs in mature hogs and may possibly have its origin from malnutrition or from some disturbances of the physiologic process of the gland structures in the pig. Such cases are usually incurable. Paralysis due to the invasion of parasites may in some instances be relieved by the proper administration of intestinal vermifuges and the elimination of all intestinal parasites. If the condition is the result of parasitic invasion of the muscle, such medication will not give immediate relief, but it is possible that it will prevent future disturbances and the animal may overcome the affection of the muscular parasites and thus the paralysis be relieved. When paralysis is due to malnutrition, it has been found that the administration of lime or lime salts, preferably calcium phosphates, is of considerable value, and usually results in overcoming the disturbance.

Paralysis frequently occurs in pigs about weaning time, and is usually diagnosed as rickets, which condition is also usually the result of a deficiency in the lime salts in their feed. Some practitioners are of the opinion that posterior paralysis in adults is in some cases of rheumatic origin.

The success in treating pigs affected with paralysis of the posterior quarters depends entirely upon the condition. In those cases in which the diet is insufficient, the addition of lime salts usually overcomes the paralysis in a week or ten days. Some cases have responded to a course of salicylates. Animals affected with this condition should not be given a strictly corn diet, but should be given in addition skimmed milk or other lime building foods. In all instances, swine should be kept under proper sanitary conditions.

TUBERCULOSIS CONFERENCE

(*Continued from Page* 558)

action. You will note that the three prominent methods of applying the tuberculin test are given prominence in the arrangement of the program.

"The bureau has up to the present time depended principally upon the subcutaneous test. It is not opposed to either the ophthalmic or the intradermal methods of testing cattle, but it has not been in a position to secure first-hand information relative to the equal reliability of those methods when compared with the subcutaneous test. Experimental testing has been conducted for a considerable period of time at various points and gradually the data have accumulated. From the work that has already been done I feel safe in saying that both the intradermal and ophthalmic methods have demonstrated that they may serve a useful purpose and that they may be applied to good advantage in conjunction with the subcutaneous test in freeing herds of tuberculosis. In fact, from the results of these experiments, the further safeguarding of the accredited herd work by combining the subcutaneous with either the ophthalmic or intradermal test or both, seems desirable in order to uncover latent or chronic cases of tuberculosis in herds under supervision."

ACTIVITIES OF THE ARMY VETERINARY CORPS.

Commendation for Major McAuslin.

Headquarters 4th Division
Office of the A. C. of S., G-1.

July 1, 1919.

From: Lt. Col. Wm. F. Robinson, Jr., A. C. of S., G.-1, 4th Division.

To: Commanding General, Third Army (attention Chief Veterinarian), through Commanding General, 4th Division.

Subject: Major R. A. McAuslin, Division Veterinarian.

1. Upon the eve of the departure of the 4th Division to the United States, I take the opportunity of bringing to your attention the Division Veterinarian, Major Robert A. McAuslin, V. C.

2. He is an officer of exceptional ability, extremely interested in his work, highly efficient, and absolutely loyal to his superiors and the service he represents.

3. Since the last of April, when the Division Remount Officer was relieved, Major McAuslin has done this work in addition to his other duties. Through his untiring efforts and ability as an organizer, the remount service has been highly developed and satisfactorily handled in this Division.

1st Ind.

Headquarters, 4th Division, American E. F., 1 July, 1919.—To Commanding General, Third Army (attention Chief Veterinarian.) Forwarded.

1. Commendation of Lt. Col. Wm. F. Robinson, Jr., Concurred in.

(Signed) MARK L. HERSEY.
Major General, U. S. A.

The following officers have resigned from the Veterinary Corps during the past month:

Captain Oliver A. Barber, 1st Lieut., V. C., R. A.

Captain Joseph N. Graves, 2nd Lieut., V. C., R. A.

1st Lieut. Owen Howells, 2nd Lieut., V. C., R. A.

The following orders of transfer and reassignment have been issued for veterinary officers.

Lieut. Col. Gerald E. Griffin, U. S. A., now on duty at Atlanta, Ga., is relieved from station at that place and directed to proceed to Washington, D. C. for station in addition to his present duties relieving Major John P. Turner, V. C. of his duties as veterinary inspector for the Northwestern District.

Major Turner was honorably discharged from the Veterinary Corps on Sept. 29th, 1919.

Major R. M. Buffington, U. S. A., recently reported from overseas has been assigned as camp veterinarian, Camp Taylor, Kentucky.

Major W. V. Lusk, U. S. A., from Walter Reed General Hospital, Takoma Park, D. C., to U. S. Military Academy, West Point, N. Y. as post veterinarian.

Major B. A. Seeley, U. S. A., from U. S. Army General Hospital No. 1, Williamsbridge, N. Y. to Auxiliary Remount Depot, Camp Meade, as the veterinarian.

Major G. H. Dean, U. S. A., from Auxiliary Remount Depot, Camp Mead, Maryland to Chicago, Illinois, for instruction in meat inspection.

Captain C. E. Cook, V. C., from Camp Taylor, Ky., to Front Royal Remount Depot, Front Royal, Va., as the veterinarian and purchasing zone veterinarian.

Captain O. J. Conzelmann, V. C. from Ft. Robinson, Nebr., to Kansas City, Missouri for duty on horse purchasing board.

Captain J. F. Crosby, V. C. from Camp Knox, Ky. to Ft. Snelling, Minn., as post veterinarian.

Captain J. E. Behney, V. C. from A. R. D. No. 329, Camp Travis, Texas, to Kansas City, Missouri for duty on horse purchasing board.

Captain P. T. Pederson, V. C. from Chicago, Illinois to Philippine Islands for duty in that department.

Captain B. C. Bridges, V. C. who has recently arrived from overseas to Ft. Keogh, Remount Depot, Montana.

Captain E. C. Conant, V. C. from Chicago, Illinois to Ft. Keogh Remount Depot, Ft. Keogh, Montana.

Captain J. H. Drayer, V. C. from A. R. D.,

(*Continued on Page* 565)

Department of Live Stock Poisoning

By L. H. PAMMEL, Ph. D., Ames, Iowa
Professor of Botany, Iowa State College

Readers are urged to take advantage of the opportunity offered by Dr. Pammel, for the identification of specimens of supposedly poisonous plants. Two good-sized specimens, carefully packed, should be sent to him direct, with such history as may be available. Simply mention that you are a reader of the AMERICAN JOURNAL OF VETERINARY MEDICINE and no charge will be made for this service.

Poisonous Plant Investigation

(Special Correspondence)

Washington, D. C., Oct. 20.—Dr. E. F. Marsh, of the poisonous plant investigations of the U. S. department of agriculture, with an assistant, is now in the Pecos Valley investigating the cause of a milk sickness which has been affecting cattle and horses in that locality and which is thus far attributed to a golden rod which grows very luxuriantly along the irrigation ditches in that section.

It is expected that there will shortly be sent to press a bulletin prepared by Dr. Marsh and his staff giving the results of a careful investigation into the poisonous milkweed (Asclepias gallioides) which has previously been reported upon to some extent by the Colorado School of Agriculture, and which has been found by the federal investigators to be widely spread throughout the southwest, especially in New Mexico, Utah, Oklahoma, and parts of Texas.

The poisonous plant investigators are also at work on the so-called "coffee berry" of Texas (Daubentonia longifolia), which like the milkweed above mentioned has been spreading havoc among cattle and sheep.

Another plant which is under the microscope of the investigators is sometimes known in Texas as the "burro weed," scientificially known as Baccharis pteronoides, which has been poisoning cattle.

Dr. Marsh's force are also pursuing investigations of the damage done by and the spread of the "richweed," as it is known in certain sections (Eupatorium uarticifolium), which grows on especially rich lands, and has been causing milk sickness among cattle. First reported and investigated by an Ohio physician, it has been found to be widely spread through the east and the middle west. It is poisonous to sheep and cattle. Samples have recently been sent in from Illinois, New Jersey and North Carolina, and it has been found along the banks of the Potomac within a few miles of the department of agriculture. It has a dark green leaf very much like the common nettle, except that it has not the spines on the lower side of the nettle leaf, and may become noticeable by reason of a very conspicuous odor.

The poison force is also pursuing its researches into the Gutierrezia, which has been found poisonous to sheep in the south and Zygadenus, which spreads further into the northwest. Another plant under inquiry is the "sneeze weed" (Dugaldia Hoopsii), which has been found poisonous to sheep and cattle.

Further investigations are being carried on, too, as to the loco weed (Oxytropus Lamberti) on which some of the earlier investigations have been made public from time to time.

ARMY VETERINARY CORPS

(Continued From Page 564)

Captain C. S. Parker, V. C. from Camp Dix, N. J., to Camp Dodge, Iowa, for duty with the 4th Division.

Captain R. P. Kunnecke, V. C. from 1st Division, Camp Meade, Md., to Ft. Keogh, Remount Depot, Ft. Keogh, Montana.

Captain C. L. Miller, V. C. from 1st Division, Camp Meade, Md., to Camp Dodge, Iowa, for duty with the 4th Division.

Captain R. H. Glenn, V. C. from 1st Division,

Camp Meade, Md., to Camp Gordon, Ga., for duty with the 5th Division.

Captain W. H. Dean, V. C. from Camp Pike to Chicago, Illinois for instruction in meat inspection.

Captain Gordon B. Huse from duty as Camp Vet'n, Camp Lee, Va., to 15th Inf. Brigade, Camp Meade. Md. for duty with the American Forces in Germany.

Captain F. R. Harsh, V. C. from duty as Camp Vet'n, Camp Shelby, Miss., to Camp Lee, Va., as the Camp Vet'n.

Officers, Veterinary Corps, United States Army

	On duty September 11, 1919	On duty October 11, 1919
Colonels	0	0
Lieutenant Colonels	5	5
Majors	47	43
Captains	90	77
First Lieutenants	187	167
Second Lieutenants	109	86
Totals	438	378

ACUTE ENDOMETRITIS

(*Continued from Page* 560)

abortion exceed seven and a fraction. In one herd where 47 per cent of the herd aborted in 1917, we had in 1918, 100 per cent conceptions, the carrying of calves to full term and the physiological expulsion of the membranes after dropping normal living calves; while in several herds in the immediate neighborhood second abortions would run from 11 per cent to 33 per cent.

Unfortunately I have no proof that the udders in all these cases were free from the Bang organism, but it would be ridiculous to suppose they were when udder infection seems so constant in infected herds. Therefore, if second abortions are due to re-infection of the uterus from the udder, how can we explain the lack of repeated abortions in so many herds coming under my observation where sanitation and the proper attention to the generative organs are carried out?

Similarly would sanitation and attention to the uterus prevent re-abortion if the most common method of infection is by the digestive tract?

Sanitation might mitigate it and lessen the exposure but it does not seem feasible that it could eliminate it entirely under ordinary conditions. My own conclusions drawn from my experiences are that either pathological changes in the generative organs occuring from an abortion not only influence or prevent conception, but also have to do with subsequent abortion; *or* the pathological changes have to do *only* with the problem of sterility and that the common scource of infection is through the vaginal canal by organisms either independent or associated with the Bang organism and that infecting or re-infecting the uterus is preventable by sanitation and vaginal douching both before breeding and for a time after conception, all of which I shall set forth in detail in my next article on the treatment of acute endometritis.

There is still another hypothesis. Two of our ablest workers, Schroeder and Cotton, seem quite confident that re-infection of a uterus with a resultant endometritis, takes place from the infected udder after conception and whether a cow will abort a second time or not will depend upon certain things, one being whether or not she has acquired sufficient immunity from the first abortion to resist the second, or again possibly the damages sustained in the uterus by the first abortion would influence the likelihood of second abortion.

If the latter theory be true it would be entirely reconcileable with what I advocate in the proper cleansing of an infected uterus immediately after parturition, so as to relieve pathologic conditions that influence second abortion.

Attractive home of Dr. I. A. Anderson of Stanhope, Iowa. In addition to the recent acquisition of this new home, Dr. Anderson is the father of a new baby boy, born to Mrs. Anderson on October 7th at the Mary Thompson hospital, Chicago, Ill. Dr. Anderson graduated from the Chicago Veterinary College in 1918 and has since built a very lucrative practice in Stanhope,

POINTED OPINIONS ON LIVE TOPICS by Readers of Veterinary Medicine

It is in reports like those of this department that the current history of the progress of veterinary science is written. Are you leaving a record of your experience which will help others, as you have been aided by these and other clinical reports? If not, you are earnestly invited to contribute from your experience that this department may be of the greatest service to its readers. By so doing you will earn the lasting gratitude of those who are aided by your suggestions.

An Obscure Trouble Affecting Cattle

Before describing the symptoms and post mortem conditions, I shall describe the manner in which these animals are fed. Our chief industries here are the manufacture of sugar and growing of cotton. In the reaping season, the animals are fed on the green tops of cane cut up in the form of chaff. Oilmeal and cottonseed meal are soaked for an hour or two, then sweetened with cane molasses and thrown over the chaff and the chaff then stirred up by hand to distribute the sweetened mixture. Others sweeten the water, then throw on the cottonseed meal and oilmeal. On the average each animal gets three pounds cottonseed meal and one pound oilmeal with two quarts of molasses per day. Young calves do not get cottonseed meal.

As the country here is rather mountainous, there are not many pastures, and the few there are grow all sorts of rank bush. I do not know all of the names of the plants and neither do the other people. In consequence of this scarcity of pasturage, to provide enough food to last the animals from one reaping season to another, the cane tops are stacked up in big heaps, and after a few months the lower portions are in a fermenting state and sometimes quite rotten. On some places, however, cane that is not reaped in the regular season, which extends from the second week in February to the end of June or July, is cut so that the animals get a little green food more or less all the year round. Sometimes they get Para grass and Tuinca grass.

Symptoms: An animal sometimes is brought in from the pasture quite all right about 11 a. m. and by midday appears tympanitic. I used to prescribe antitympanitics such as oil of turpentine, aqua ammonia, sodium hyposulphite, etc. with oil, but never got any good results. I also punctured the rumen but very little gas escaped. They just remained distended. In some cases at the onset a violent diarrhea would be noticed, for which I prescribed all the various intestinal astringents and antiseptics—opium, camphor, chalk, bismuth, carbolic acid, catechu, etc., —without the slightest benefit.

In other cases constipation at first predominates, and I used to give magesium sulphate, 16 ounces, in a gallon of water, but as that did not have the desired effect, I gave magnesium sulphate, two pounds, with sodium chlorid, one-half pound, in two gallons of water. Sometimes it worked and at other times it did not. Then I tried various nerve stimulants, carbonate of ammonia, nux vomica, mustard and gentian in drenches, sometimes strychnin alone. If I got no appreciable results, I gave calomel, one dram in one to two quarts of linseed oil. Sometimes I performed rumenotomy, but it didn't do any good.

With this diarrhea, slight pain is shown by the animal shifting about on its legs, but the pain is not constant. In other cases the animals remain lying down. A rather peculiar symptom is a heaving sigh; that is, a contraction of the abdominal muscles with the diaphragm fixed, then the abdominal muscles relax and the animal groans. Appetite is lost but water is taken freely; rumination ceases, etc. The temperature varies from 102° to 105° F. A day or two before the animal dies, it gets delirious, the eyes glare, and it rushes at people, dogs or anything, also at imaginary objects. To prevent the animals from doing damage, some are destroyed by shooting. Others get exhausted, semi-comatose and never rise again. Sometimes they live for a fortnight, but the usual course is eight days. Very young calves, i. e. under one year old, are not affected. Bulls, cows and oxen are equally affected. Sex exercises no influence on the malady. Some of the animals are in a well nourished bodily condition and others are hide-bound and thin. They seem to be affected at any time of the year.

Post Mortem Findings: On skinning along

the inferior surface of the abdomen, one notices the superficial veins quite distended with blood and subcutaneous hemorrhages in the form of extravasations. When the abdominal cavity is opened, an enormous quantity of water (serum) sometimes slightly tinged with blood, is seen. This varies in amount up to 35 gallons. The peritoneum is studded with isolated hemorrhages the size of a pinhead or a little larger. Circumscribed patches the size of one's palm occur here and there. The liver is not enlarged to any appreciable extent, but has the appearance of being hardened (cirrhosed) with a sort of grayish color; gall bladder distended; bile quite black in color; spleen normal. The kidneys show parenchymatous inflammation. The lungs are congested but I have never seen them hepatized; sometimes they are collapsed and anemic but mostly congested. The heart itself is very often affected; its walls are usually thin and flabby; the muscle appears pale in color and the fat around it is gelatinous. In fact, whatever fat there is in the body is of a gelatinous consistency. Hydrops pericardii is almost always constant. The mediastinal lymph glands appear normal, but a milky fluid (lymph) oozes out.

The stomachs, rumen, recticulum and omasum, I have always found in a normal condition. The local opinion, however, is that it is an impaction of the omasum as the people claim the contents are always dry, and consequently the trouble is known here locally as "book burnt," but that is a mistake. The abomasum, however, is always more or less inflamed and so are the intestines. The mesenteric lymph glands appear enlarged, very pale in color and on being cut exude a milky fluid (lymph). I have never observed any enlargement of the tongue or swellings on the body. I have examined the brain of a few animals but have never found anything to account for the delirious symptoms, which I ascribe either to pain being of a reflex nature or to some unknown toxin.

The trouble does not assume an epizootic character. An animal is lost one month, two or three next month, and an interval of a month to three months may elapse before another is lost, and so on. The meat is eaten with impunity by people and dogs. Being the only veterinarian here and being so busy in general practice, I cannot devote much time to experimental work, and the people knowing how futile are the attempts to remedy the condition, generally let the animals die without bothering to notify me.

I thought at first that the pastures might have some connection with the condition, but as mules, sheep, etc. are pastured on the same places and they do not get it, I had to exclude that. The water cannot be the cause as people drink the same water without any bad effects. I suspected the chaff but had to give up that idea as mules and horses eat it without getting the disease. The cause, whatever it is, must be operating for some time to cause such quantities of fluid in the abdominal cavity. I also thought it might have been due to an excess of saccharine in the food, but the cattle of poor people that do not get molasses are quite as subject to the disease, while mules and horses do not get it. I blamed the cottonseed, but the people inform me that the affection was known years before cottonseed meal was used as food. One owner believes it is due to a plant called wild ipecacuanha here, but the agricultural superintendent informs me that he fed the wild ipecacuanha for months to an animal without the slightest ill effects.

Can it possibly be hemorrhagic septicemia? I thought so, but as sheep and horses seem to be immune, I abandoned the thought. It certainly bears a marked resemblance to that disease, but on account of the absence of swellings, I did not like to pronounce it such.

If any of the Journal readers can give me any information concerning this trouble, I shall be thankful. Would any one advise vaccinating the whole herd with hemorrhagic septicemia bacterin?

St. Kitts, British West Indies ERNEST F. JARDINE, Govt. Veterinary Surgeon.

MAMMITIS IN THE MARE A SEQUEL TO DIGESTIVE DISTURBANCES

On the night of July 7th I was called to see an aged draft mare which the owner said was in bad shape as "her udder was swelled as big as a bucket." Upon my arrival the owner said she had been running in a small pasture with her baby mule, six or eight weeks old, and that he had been taking her up and feeding her evenings. On this evening she had only partly cleaned up her fed and had seemed lame when he went to turn her out again. He had then investigated and found the swollen udder. Judging from the symptoms I couldn't believe the condition was of such sudden onset.

The left half of the udder was intensely swollen, the teat and adjacent parts cold and clammy, with exudation standing in droplets. Although there was some abrasion of the teat, it was impossible to determine whether it had existed before the inflammation set up or was the result of distention of the skin. The periphery of the half was hot, tender and edematous. Her temperature was 105° F., pulse 90 and respiration accelerated. Peristalsis was sluggish; conjunctiva injected.

My diagnosis was mammitis, probably of infectious origin.

Prognosis: not hopeless but grave.

Treatment: I administered quinin sulphate, dram 1, and digitalis, dram 2, in capsule. Dispensed the following:

℞—

Magnesii sulphatis .....lb. 1
Pv. zingiberis .....oz. 2
Pv. gentianæ .....dr. 4
Pv. cinchonæ rubræ aa.....dr. 4

M. Sig. Give one-half at once as drench and balance in morning.

I prescribed the following for local application:

℞—

F. E. belladonnæ .....dr. 2
Liq. cresolis comp.....dr. 1
F. E. phytolaceæ.....dr. 4
Saponis mollis et
Pv. corticis quereus albæ
q. s. ad .....℥ 4

M. ft. ung.

Sig. Carefully rub ointment into swollen part b. i. d. after using hot cloths at least 30 minutes.

I put the owner to work applying a towel wet with hot one-half per cent creolin solution, and instructed him to carefully milk out the affected half while using hot applications.

The next day after dinner I found the patient breathing much better, temperature 103.5° F. and pulse 60. The swelling was softening a little. As the mule pestered her and was rough with the sore udder, I had him taken away and allowed to suck only under supervision. I used polyvalent mixed bacterin and left potassium nitrate to be given, one tablespoon in a gallon of drinking water t. i. d. Although it took several days for the swelling to entirely subside the mare made an uneventful recovery.

As to the etiology of mammitis, while it is doubtless often of infectious origin and not infrequently the result of physiological processes, I am inclined to believe that it sometimes arises from digestive derangement, as does laminitis, without other assignable cause. I have observed a number of such cases where mammitis occurred rather late in the lactation period and in every case the digestive disturbance appeared to be primary. I should like to learn through the columns of the Journal if others have come to the same conclusions.

Perry, Iowa. N. R. Allen.

AFTERBIRTH REMOVED, BUT FETUS LEFT IN THE UTERUS.

A good client of mine called me recently to remove the placenta from a cow that had calved the day before. I found the os was closed so that it would hardly admit two fingers. Without very much difficulty I dilated it and obtained the placenta easily. Two days later the cow had another calf, and now my client thinks he has a joke on me, and I suppose he has. I should like to know if such an occurrence is common. I have never before seen the cervix contract after the birth of one twin and before the birth of the other. Further, did I err in not discovering the calf still in the uterus? I have made it a practice to manipulate the uterus just as little as possible in removing the afterbirth, and as it came away readily in this case, when the os was dilated, I did not introduce my hand into the uterus any more than was necessary.

Oklahoma. J. J. K.

BACTERIN AND PHYTOLACCA ESSENTIAL IN THE TREATMENT OF MAMMITIS

I note in the October Journal an article on mammitis. Ten years ago I was inclined to shy at this trouble, for I would have suppurating udders, lost quarters and halves and frequently a bill as large as the value of the animal. Today, I take charge of a case of infectious mammitis more freely than a case of impacted rumen.

This summer I have treated thirty-seven cases and today every one is giving milk from all four quarters, and four visits were the most made to any case, and a few of them required only two visits.

I treat as follows: First I insist that the owner or attendant follow my instructions to the letter, otherwise I will not treat the case.

I administer a full dose of mastitis bacterin, which I repeat every third day, administer a full dose of sulphate of soda or magnesia and 15 drop doses of tincture aconite (Fleming's) till fever abates.

I order hot water applied to the udder as continuously as possible for ten or twelve hours, with frequent milking, and follow this with ointment of phytolacca, later changing to iodin ointment to hasten resolution.

I attribute my success to the hot fomentation and the bacterin. I would as soon think of going into an operation without hemostat forceps as to treat a case of infectious mammitis without bacterin. In the early stage of this trouble I have never used anything in the way of ointment that will take the place of phytolacca.

Maiden, N. C. J. E. Hodges.

MANIA PUERPERALIS.

I note with a great deal of interest an article in the October issue of the Journal by D. M. Phillips, of Huntington, W. Va., on a case resembling forage poisoning in a cow. I think I can throw some light on his case.

If he will look up Fleming's "Obstetrics," page 687, under the head of Mania Puerperalis, I think he will find the symptoms of his case described very thoroughly.

While this disease is unknown in a great many sections of the United States, it is very common in this part of Ohio. I have been practicing about 28 years, and I do not think I would be stretching the truth very much if I said I had treated 100 cases of this disease.

These cases generally come on from a week to two weeks after calving. And the best thing I have found is a hypodermic injection of hyoscyamin, 1/8 grain. After the nervous symptoms have subsided, I administer artificial Carlsbad salt.

Norwalk, Ohio. J. H. FULSTOW.

CESAREAN SECTION IN A COW

The accompanying illustration is of a valuable registered Holstein cow with the following history.

This cow was due to freshen July 1st. On July 13th I was called and found a dead fetus with emphysema of every tissue. Embryotomy might have been performed, but as the os and posterior ligaments were nearly all contracted, there was little chance of making a successful delivery. Cesarean section was therefore performed.

This picture was taken August 27th. Many cases of dystocia in the sow and cow could be saved if cesarean section was resorted to in the beginning instead of trying for hours to perform embryotomy and failing, then trying the cesarean operation whereupon the case usually dies as so much inflammation has been caused by soiling and manipulation of the posterior parts.

Westfield, Pa. E. L. SIMPSON.

A SIMPLE CONTRIVANCE FOR VACCINATING HOGS.

I note with interest the article in a recent issue of the Journal on the subject of charges for hog cholera vaccination and will give my method of charging for this line of work.

I charge the owner what the serum costs me, showing him my invoices if he is inclined to be skeptical. I charge in addition a substantial fee for my services, taking into consideration the distance traveled and the time required. If one expects to practice in a community during his life of usefulness, he must give a dollar's worth of service for every dollar charged. Otherwise he would soon be compelled to look for new and greener pastures. Do not forget that "honesty is a principle, not a policy."

I find a convenient way to handle hogs when injecting them with serum or toxins, is to use an old door, or a few boards nailed together about the size of a door. Then two men can easily crowd two or three of the animals into the corner and by working over the door I can accomplish my task very easily and go through the herd without a squeal. This method of handling is easy on the hogs as well as on my helpers.

I urge everyone doing any swine practice to study the subject of mixed infection. It has undoubtedly been mistaken for cholera many times, and when so mistaken leads to grief all around.

Shawano, Wis. B. ROYER.

BUSINESS METHODS OF CHARGING FOR VACCINATING HOGS.

Is veterinary practice different from the average run of business? I say "No." Why not apply ordinary business principles in the matter of charges and collections for veterinary service? My answer is: "There is no reason for not doing so."

I note that the veterinarians who have charged clients very exorbitant prices for their work once do not get the opportunity to do it a second time. I have known carpenters, plumbers and garage men to be guilty of the same unwise practice, and with the same results. If I charged a man $1.65 a head to vaccinate sixty-pound pigs, I would not expect to get his work again in vaccination or any other line.

My regular charge for vaccinating hogs for the prevention of cholera, is one-half a cent per cc. for the serum and virus used. If the herd is small, I charge mileage extra. If it is unusually large, and everything arranged to make the work go off quickly, I charge less. At times I incur the enmity of my neighboring practitioners by this plan, but that is the least of my worries, since I still am capable of taking care of my own business. A few days ago one of our farmers came to me, to vaccinate his herd of 400 hogs. He wanted them given both the anti-hog cholera serum and swine plague bacterin. I was surprised, as he had been known throughout the community as one who did his own vaccinating.

The thing that started this man to doing his own vaccinating may be of interest. On the first job of vaccinating that he had done, the veterinarian charged a fee that netted him $150 per day. This was several years ago. I made him a price that would net me $50 and told him so, and this he was perfectly willing to pay, and I believe will be willing to continue to pay me to vaccinate his hogs perhaps twice a year, continuously in the future. In the long run, won't I be ahead of the veterinarian who tried to get it all at

once? At any rate, I am satisfied with my fee, and so is my client.

In my opinion the only way to standardize the work of vaccinating hogs, is to place this work exclusively in the hands of qualified veterinarians. Most of the profiteering in vaccination in this community has been done by unqualified men. They have other vocations, and vaccination with them is a side line, and if they can make a "killing" in any cases they are perfectly willing to do so, and to depend on new dupes for future opportunities. It is unjust to the live stock industry for the laws of any state to permit such men to use hog cholera virus, or any other agent capable of spreading disease.

There are three men in this county who are not qualified to do vaccinating or any other veterinary practice, and are not licensed for practice. They simply bought their syringes, inserted big ads in the county papers, and went to work, and they are getting lots of it. But their greatest asset and actually the thing that started them in this business, was the fact that a few veterinarians around here had charged exorbitant fees for their work, resulting in dissatisfaction of the men who had to pay their fees, and a stimulation of the cupidity of these unqualified men, who thus thought they saw a chance to make some easy money.—R. S., Indiana.

WATER Q. S. RELIEVES IMPACTION.

I have read with interest several of the good articles in the October issue of the Journal on the treatment of impaction in horses. The treatment outlined by Dr. Harbaugh on page 517 is the one that has given better success in my hands than any other. I hold autopsies on practically all of my large patients that die from abdominal ailments, and I have yet to find one that has died as the result of any impaction of any part of the alimentary canal after being treated with a stomach tube in the manner described by Dr. Harbaugh. I pass the stomach tube through the nostril, and at intervals of from one to six hours inject all the warm water the patient will stand without distressing it too much. If the patient is not too far from my office, I make a call for each of these treatments, and add any medicaments to the water that I think advisable, either for therapeutic or psychological effect, but I depend mostly on the water for results. After a few of these treatments I rarely fail to find a normal peristalsis and the patient practically free from pain.

Another advantage of this treatment worth mentioning is the fact that one is able by passing the tube on various occasions to discover gastric flatulency, or gastric impaction, sometimes due to reversed peristalsis, and to relieve both conditions.

This treatment is just as successful in cattle, but they do not respond to the usual line of treatment where there is a stasis in the alimentary canal. The tube should be passed through the mouth in the bovine, using a speculum, and instead of the cow showing symptoms of distress after receiving an amount of water, she will sometimes cough, and in doing so give the operator a bath, if he happens to be standing in range of her barrage.

Nashville, Mich. B. E. MILLER.

BACTERINS PLUS SANITATION EFFECTIVE IN PREVENTING ABORTION.

Contagious abortion is a menace of vital interest to the cattle industry, and it is the duty of the veterinary profession to put forth its utmost effort to control this malady. I will give my method of handling contagious abortion in cattle in a few herds that have come under my observation in the last three or four years, and the results obtained.

When I am satisfied that I have contagious abortion in a herd, I separate the aborters when possible to do so, from the rest of the herd and clean and disinfect the stable, also the external genitals of all the animals, flushing the uterus with a normal salt solution, followed with mild Lugol's solution, and insert in the uterus a one-ounce capsule of iodoform and boric acid, 1 to 6, once a day, for three or four days, and use anti-abortion bacterin on all the animals in the herd.

First herd of 18 cows, 6 had aborted, no further abortions after treatment.

Second herd of 16 cows, 4 had aborted, no further abortions after treatment.

Third herd of 12 cows, 6 had aborted, no benefit from treatment.

Fourth herd of 31 cows, 4 had aborted, no further abortions after treatment.

Fifth herd of 17 cows, 3 had aborted, no further abortions after treatment.

Sixth herd of 30 cows, 3 had aborted, no abortions after treatment.

Seventh herd of 30 cows, 3 had aborted, no apparent benefit from treatment.

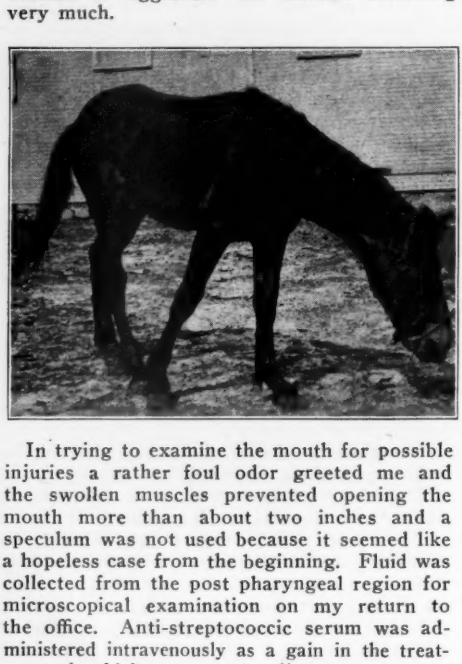
From my observation in the handling of aborting herds, I believe that the bacterin treatment is of material benefit, but a thorough disinfecting of the premises and animals is absolutely necessary. I have observed that where the conditions favor disinfection, such as cement floors and well-built quarters, the results are satisfactory, but where there are wooden floors, poorly arranged barns, muddy and filthy yards, and a careless or indifferent owner, then the treatment better

not be attempted until such time as you can better the conditions.

Shawano Wis. B. ROYER.

UNSUSPECTED CASES OF MALIGNANT EDEMA MAY GET THE VETERINARIAN INTO TROUBLE.

The accompanying illustration was to me very interesting. From all appearances one would think that this was an aggravated case of laryngitis, but if this had been the cause of this animal's illness it would have had a much greater chance to survive the infection. At the time this picture was taken the post pharyngeal region was considerably infiltrated, cold and edematous to the touch. The masseter muscle was also infiltrated and the eyelids had become edematous. The breathing was labored as can be seen by the retracted commissures of the mouth, the hanging head and the depressed appearance. The gait was weak and wobbly; there was disinclination to move any distance at a time and moving seemed to aggravate the difficult breathing very much.



In trying to examine the mouth for possible injuries a rather foul odor greeted me and the swollen muscles prevented opening the mouth more than about two inches and a speculum was not used because it seemed like a hopeless case from the beginning. Fluid was collected from the post pharyngeal region for microscopical examination on my return to the office. Anti-streptococcic serum was administered intravenously as a gain in the treatment should it prove to be distemper.

The fluid proved to contain bacilli which when, allowed to be exposed to the air for several hours and another slide prepared revealed many spore containing germs identical to the malignant edema bacilli. These findings and the course of the infection left no doubt in my mind as to its being the above named infection. I realized that treatment was useless, but decided to visit the patient the following day. The swelling had spread to the point of the sternum and cyanosis of the visible mucous membranes was present. The owner was informed of my prognosis and the animal was killed and an autopsy held.

The autopsy showed that a split molar had penetrated the right cheek and was undoubtedly the source of the infection. A very careful autopsy was not made owing to the danger of infection from handling the parts.

There are one or two good lessons that I have learned in handling these cases and that is not to be too certain that all animals showing symptoms of distemper, laryngitis, etc., must have this or that infection as several of such patients have turned out to have malignant edema. Another lesson is that when an animal harbors such an infection leave subcutaneous injections alone, unless you do not care about having the infection spread to that area. I have had my share of trouble with such infections and I have learned from costly experience not to administer subcutaneous injections in doubtful cases if you want to avoid some of the above described after effects Intravenous injections under asepti precautions are not followed by any visible undesirable effects and when biologics are given that can be given intravenously they should be so administered until a correct diagnosis can be made or at least until malignant edema is eliminated as a possibility. I recall one occasion where I was called in consultation to see a horse that had been treated for a colic the day before and which developed a large swelling at every point eserin had been injected. This animal, one of a nice gray team, died of malignant edema the following day. About two weeks later the mate seemed to be suffering from colic and the veterinarian was again called, the same injections given and this animal also died of malignant edema. In the first case there was the possibiiity of having carried the infection into the tissues with the needle, but in the second case this route was not quite so clear as the parts had been shaved and painted liberally with tincture of iodin.

Williams, Ia. W. P. BOSSENBERGER.

"WOULD PUT PEP" IN VETERINARY MEETINGS

I think if the program of veterinary meetings was turned over entirely to practitioners that the average of our meetings would be much improved. Take swine diseases for example. We could learn more on the subject if an up-to-date practitioner were to discuss one subject only instead of some scientific "bug" getting up and starting a general discussion which ends up in everybody being confused. Talks on medicines, restraint, treatment of specific diseases and so on, are always good, but these scientific college discussions on the whyness of the what and the whichness of the whence only cause the average

veterinarian to go to sleep. New methods, new medicines, new wrinkles of practice are what we want to hear. These are merely my ideas, and no charge is made for them.

Moscow, Idaho. E. T. BAKER.

LUGOL'S SOLUTION AND GLYCERIN A SATISFACTORY WOUND APPLICATION.

I was interested in an article in the October number of the Journal on the treatment of wounds by Dr. W. J. Moon, in which he speaks of using iodin and ether.

My favorite in the treatment of wounds is iodin, but I think I get better results from Lugol's solution or Lugol's solution and glycerin, than I do where ether is used.

For open joints and open bursae I mix Lugol's solution and glycerin, about equal parts. For ordinary wounds I use plain Lugol's solution.

A short time ago I received a case where a horse had been kicked on the point of the shoulder, the heel caulk of the shoe striking the bone. The opening was barely large enough to admit my finger. I used clear Lugol's solution, injecting twice daily. The animal made complete recovery in two weeks, which I consider a very satisfactory outcome in a wound of this character, badly infected as it must have been.

Fillmore, N. Y. ROBERT E. OAKS.

TUBERCULOSIS IN RANGE CATTLE.

Early last spring an old friend of mine wrote me for my opinion as to whether it would be advisable or not to apply the tuberculin test to range cattle. He informed me that he had been having quite a number of his cattle rejected at the packing plant on account of being tuberculous. The last car he had shipped to Seattle had nine tuberculous steers. He told me he had talked the matter of testing over with a number of old and young cattlemen, and in every instance they told him not to do it as it was not practicable. I gave him my opinion that I could apply the intradermal test and we could see what the result would be.

It took the combined efforts of six cowboys and myself to get the cattle into the chute in order to apply the test. They were injected after some trouble due to breaking of needles, etc., and then turned loose. Seventy-two hours later they were again driven into corrals for observation. Out of 222 head, twenty-eight were found with swellings. They were branded and segregated and then quarantined. As some of them were pregnant cows, I told the owner to wait until after calving before sending them to the packing house.

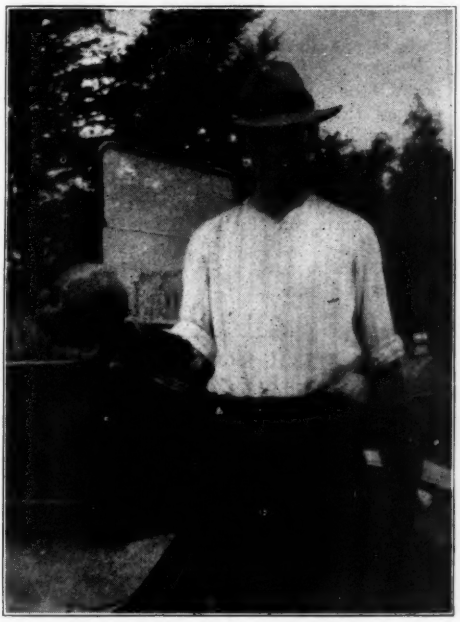
Last month they were sent to Seattle, killed and inspected under federal supervision. Lesions were found in all but one, and the following disposition was made of the carcasses—16 for food, 4 sterilized, 8 condemned.

These were strictly range cattle, had never been housed and roamed over 16,000 acres. The owner is now convinced and a firm believer in the tuberculin test and says he is going to test all of his cattle, at least once every eighteen months. As he sometimes has five or six hundred head, it will at times be quite an undertaking.

Garfield, Wash. A. R. GALBRAITH.

TUMOR REMOVED FROM MARE'S FOOT

The accompanying illustration shows a tumor that I removed from a mare, twelve years old. It was on the posterior part of the right front foot even with the hoof on each side and also the frog and sole of the foot extending up to the fetlock joint. It was a fibrocartilaginous



tumor and weighed five pounds and four ounces. As I never before saw a tumor of this kind in this place, I thought it might possibly be of interest to other Journal readers. If any one has had experience with such cases, I should like to learn about the results. So far this mare seems to be getting along fine

Birnamwood, Wis. H. W. JACOBSON.

A MAL-FORMED FETUS.

I was called recently to treat a cow that had been in labor for half a day. On examination I found the small intestines of the calf

were free in the uterus. After amputating one hind leg, delivery was effected without very much difficulty. In this case the umbilicus was closed, and the small intestines were outside instead of inside the abdominal cavity. Otherwise the calf appeared normal.

Long Prairie, Minn. DR. W. A. ELVER.

SUCCESSFUL REMOVAL OF TEAT OBSTRUCTIONS.

My way of removing teat obstructions is to cast the cow with the teat affected uppermost, thoroughly cleanse the teat and paint with iodin, let this thoroughly dry, then spray with ethyl chlorid, make an incision into the duct of the teat over the obstruction and with a pair of scissors entirely remove the fibrous obstruction, suture the incision, using a small needle and thread, usually linen, and uninterrupted sutures. Again paint with iodin and wrap electrician's adhesive tape around the teat. Remove the tape about five days later and in a day or so remove the stitches.

I have operated on a number this way with uniformly good results. So far I have not operated on any case where the obstruction involved the base of the teat, extending into the sinus, but I intend trying the same operation on the next case met with, by making the incision into the teat and using narrow-balded scissors to get at the obstruction.

Leaky teats and lacteal fistula are treated the same way with suture and tape. Injured teats from wire cuts, snags, etc., are treated by suturing and tape.

Denison, Ia. HAL C. SIMPSON.

"KILLED WITH KINDNESS" INSTEAD OF MISTREATMENT

On June 16th last I was called to a nearby town to see a bay mare (chunk) six years old, used in a coal wagon, suffering as the owner said, from stiffness. Upon arriving at the place, I found the animal showing symptoms generally seen in laminitis. Examination showed injected membranes, temperature 103.5° F., respiration somewhat faster than normal, and considerable heat in both front feet. I prescribed the usual treatment for laminitis, consisting of rest, cold compresses, febrifuges (Lloyd's bryonia) in 20 mil doses every two hours, in which I have great faith in early inflammatory conditions, elixir buchu, juniper and potassium acetate as a diuretic in one-half ounce doses three times a day.

I gave instructions to restrict the diet to green feed and bran. Two days later I made another visit and found the animal doing nicely, except an occasional symptom of pain which was confined to the lumbar region as the animal resumed the recumbent position, occasionally placing the muzzle to the lumbar region, then stretching out flat upon one side, remaining in that position for a time, getting up and appearing as well as usual, but several times daily would resume this same position for a short time and show evidence as before.

I thought of the complications following laminitis, principally those of the bowels, but could not satisfy myself as to there being any trouble there, as these organs were nomal. I left saline laxative and told the owner to call me if there was no improvement.

On August 30th I was called again to see another mare, a mate to the first, same age. Two weeks before she was in very good condition, but had gradually lost flesh and lamed in one or both hind legs; no appetite; no desire for food or water; urine scanty and of a dark reddish color; swelling and soreness over kidneys. I examined the first mare and found the posterior extremities partially paralyzed. The owner informed me that the first animal had improved slowly and was about ready to be put to work when paralysis became noticeable. The following day both were completely paralyzed posteriorly. Diagnosis, uremia following diffuse nephritis. I advised destruction. Post mortem examination showed enlargement of both kidneys in each horse, and about an ounce of creamy pus in the pelvis of each kidney, confined to several small pockets. There were several broken ribs on the right and left sides of each animal.

This team was fed by the owner himself all they could eat three times a day, work or no work. The owner, having lost several horses before, under similar conditions, and changing drivers before, seemed to think hard of some previously employed men, and had I not made a post mortem examination, no doubt some blame would have been placed upon the innocent for mistreatment owing to the broken ribs, which were without a doubt fractures by the frequent attempts to attain the standing position. After the true conditions were revealed to the owner, he stated that it was without a doubt, a case of "killed with kindness" rather than mistreatment.

Hollidaysburg, Pa. J. B. GIFFORD.

CANCEROUS GROWTH IN A HORSE

One Saturday in September, I was called out to a farm to see a horse that had been brought from the west only a few weeks previous. It was a handsome sorrel, four years old and weighing about 1,450 pounds. Within the past week the owner had noticed the animal breathing hard, especially when wearing a tight fitting collar, and on examination, observed a swelling at the base of the neck on the medial side. This had enlarged rather rapidly, so it became a menace to breathing especially when eating. Strong liniments were applied to the swelling, if possible to reduce it,

On Monday I was called again, the owner saying the horse was in a bad condition and I had better come up at once. On arriving I found the animal as described, breathing with considerable difficulty. Leading him on the barn floor, he reeled and about went down. In a couple of minutes he reeled again and went down, and at once died from suffocation before I could give any help.

Post Mortem: By cutting through the outside structures, namely the skin and one layer of muscle, my knife came in contact with a hard tough substance. I at once dissected this from the adjoining structures as best I could and removed a growth about the size of a man's head, weighing several pounds. In its center there was a small cavity containing nearly a teacupful of pus of a yellowish color and rather thin. This whole mass had grown around several of the adjoining structures, namely the esophagus, trachea, blood vessels and nerves. Its hard structure and its size had caused the trachea to become entirely collapsed for four or five inches, thus shutting off a goodly part of the air which should have passed to the lungs.

The location of this foreign mass lay anteriomedial to the seventh cervical vertebra, just anterior to the sternum and occupying this space so completely as to cause all other structures either to be pushed out of their normal position or to be absorbed into its mass.

From its history and from its macroscopic examination this appears to be a cancer or a carcinoma.

Utica, N. Y. M. F. WILKINSON.

FORAGE POISONING IN TURKEYS

This is a disease of turkeys known as blackhead, enterohepatitis, etc. Being a breeder of pure bred White Holland turkeys for the last fourteen years, perhaps I am in a position to give the profession a few points in regard to this disease that have not been touched upon before. In 1911, the year I finished school, I had sixty young turkeys, and lost all but ten or twelve. I began to make a study of this disease. Knowing the loss it would cause this county, (six to ten carloads of turkeys are shipped from this section every year), I first tried to find the cause, then treatment.

Predisposing Cause: Several days of wet weather followed by several days of hot dry weather. During the wet weather the grass becomes sappy. When followed by several days of hot dry weather, the seed head becomes mouldy. If you will watch turkeys feeding when on the range, you will find they strip the seed head from the grass stock. They will start out on the range in the morning, perfectly well, and come back at night sick. I have never seen a case of so-called blackhead during a dry season or in the winter time.

Cause: Mould or fungus poison.

Symptoms: The bird refuses to eat, becomes dull and very thirsty, feathers become ruffled, wings and tail droop, head usually becomes purple, discharge from the bowels, a greenish yellow color.

Post Mortem Findings: Enlarged liver, intestines discolored, and covered with petechia.

Treatment: When an outbreak occurs in the flock, put the whole bunch, sick and well, in a well ventilated, roomy shed or house, give each bird one tablespoonful of castor oil and allow no food or water for twelve or eighteen hours. Then mix up a saturated solution of potassium permanganate, put one tablespoonful to each pint of drinking water and allow them to drink all they want.. Feed soft dough of corn meal and wheat bran mixed, on clean boards, feeding boards to be removed after each feeding, and to be kept perfectly clean. Do not turn turkeys out of house until entirely recovered, it usually requiring a week or ten days for them to recover.

Report on the above treatment: I have personally lost only a few turkeys since I have been following the above line of treatment. I have had it in my flock every year except one, and that was a dry season.

Mrs. S. came to my office, said she had lost thirty turkeys out of a flock of sixty and that the other thirty were sick. Upon examination I found so-called blackhead. The above treatment was prescribed, and no further loss occurred. Mr. B had a flock of fifty head, lost two or three, the balance sick. Same treatment prescribed, with the loss of only one.

I could give numerous reports like these.

A few things to remember:

Give treatment before bird is too far gone. Keep turkeys confined until entirely recovered. Allow all the potassium permanganate solution they will drink, making fresh solution each day and feed on clean boards.

Tazewell, Virginia. T. PAUL PERRY.

A NEW ANESTHESIA FOR HOGS

Some few nights ago I was called to see a young gilt that was having difficult delivery. As I had neither ether nor chloroform, I decided to try H. M. C. tablet compound (hyoscine 1/100 gr., morphine ¼ gr., cactoid 1/64 gr.) This was given intravenously in the ear. In about fifteen minutes, after restraining the gilt with ropes on the top of a box, the usual method of cesarean section was gone through without a single squeal. After completion of the operation, the gilt got up and walked off grunting to her two live pigs, which the owner had delivered twenty-four hours before. No ill effects have been noticed up to the present time.

Has any one tried the above method of anesthetizing? I have never heard of nor seen an

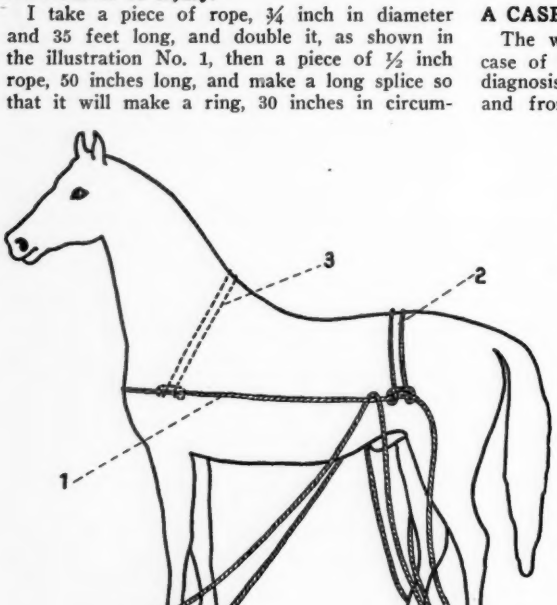
article on H. M. C. for swine anesthesia. I may be behind the times but would like to know if it has been used before and with what results.

Kirksville, Mo. H. W. YOUNG.

A CHEAP AND EFFECTIVE CASTING HARNESS

I noticed the request of E. T. F., Minn., in the June issue, for a cheap and effective casting harness. I think I have something original, which when once used will be well thought of. With it a horse can be thrown with ease, secured as tightly as with any harness and with little chance of injury.

I take a piece of rope, ¾ inch in diameter and 35 feet long, and double it, as shown in the illustration No. 1, then a piece of ½ inch rope, 50 inches long, and make a long splice so that it will make a ring, 30 inches in circumference. This is placed on the 35 feet rope as shown in the illustration, marked No. 2. For common colts, this completes the harness. The middle of the 35 feet rope is put on the colt as a breast collar, high up on the neck; loop No. 2 is placed over the loins; then the ends of the rope are passed back between the hind legs in the usual manner and under the fetlocks, brought forward again and passed under the rope just in front of loop No. 2. A man stands in front of the colt and backs it while two men, one on each side, pull straight away. When the colt is down it is tied in the usual manner.



I find this the most satisfactory harness I have ever used for ridglings. In these cases, I see that loop No. 2 is placed well back first. Then I place a piece of rope, marked No. 3 in the illustration, as the strap on a breast collar is placed; then throw in the usual manner. When the horse is down, I put a pole strap on each front foot and strap the feet to the throwing harness above as tightly as possible. A piece of rope may be used instead of the straps.

There are a number of reasons that will be apparent after using it, why this harness will appeal to the average practitioner, and after using it a while, he will be like the hobo using Pears soap, who said, "Since then I have used no other."

Davidson, Sask. W. G. BALLARD.

A CASE OF LEUKEMIA IN THE HORSE

The writer recently had occasion to treat a case of leukemia and follow it to the end, the diagnosis of which was verified both clinically and from a laboratory standpoint and finally confirmed by autopsy. The history of the case showed a gradually oncoming of languor, emaciation and weakness. The case had been treated for influenza previously by another veterinarian, the diagnosis being based upon the swellings present and icteric membranes.

Clinical examination of the patient, a six year old gelding, showed a temperature of 99° F, pulse 56 and irregular, respiration 22, and enlargements of all palpable lymph glands. The animal was very weak and lame in the left hind leg from the swelling of the lymphatic system. Auscultation of the heart and lungs showed a marked systolic murmur with the area of cardiac dullness extending outward, showing some hypertrophy. The lungs were normal.

Diagnosis was reserved until I had time to test this animal with mallein and make a laboratory examination.

Smears were taken from the nose and eyes. Ten mils blood was removed from the jugular, and the animal catheterized and a sample of urine obtained. Inoculation of media with the material from nose and eyes showed nothing except the usual flora found in these secretions. Due to clotting of the blood no count could be made. but the blood was observed to settle into two strata of different color. Smears stained showed an enormous increase of leukocytes consisting of lymphocytes, and some myelocytes of the eosinophilic variety were noted. The erythrocytes showed crenation and some poilkilocytosis. Tested with a Talquist hemometer the blood showed a lack of hemoglobin amounting to 30% loss. The urine contained no sugar nor abnormal amount of albumin. No tube casts, pus, blood or bacteria were ob-

served. I made a tentative diagnosis of leukemia and went back the next day taking my hemocytometer along for the purpose of obtaining a sample for counting. At the same time I gave the animal an ampule of sodium cacodylate.

Returning to the office I made a count which revealed the following: erythrocytes, 6,800,000; leukocytes, 70,000; lymphocytes of the large variety preponderating. Some transitional forms were also noted. A positive diagnosis, was made and a fatal prognosis given. The animal was put on iron phosphate and strychnin with nuclein and sodium cacodylate, but with no beneficial results. Subsequent counts revealed a gradual increase in white cells while the clinical picture grew gradually worse. Shortly before death a count showed a leukocytosis of 110,000; reds 5,600,000 and 60% hemoglobin.

Autopsy showed a general involvement of the entire lymphatic system. The spleen was slightly enlarged. The other organs aside from the usual findings in a case of progressive emaciation were normal, except the heart which showed evidence of an acute endocarditis having at some time been in progress. The greatest damage was in the left heart, the ventricle and auricle of which were greatly hypertrophied.

DR. C. E. JORGENSON,
Clermont, Iowa. *Assistant State Veterinarian.*

TREATMENT OF MIXED INFECTION OR HEMORRHAGIC SEPTICEMIA IN SWINE

Symptoms

The symptoms as found are various, but the usual ones that the farmer describes are white pasty diarrhea, or green diarrhea in some cases, staggering gait, rough coat, gauntness, appetite poor, the hogs eating but small amounts of feed at a meal, but nearly all take a little food. At this stage, the veterinarian is called, and sees all of the symptoms enumerated above, and in addition there may be elevation of temperature up to 106° F. to 107° F., or in cases where there is profuse diarrhea, a subnormal temperature. The shoats will pull themselves away from the well hogs, crawling under weeds, grass or straw, or any article that will shield them from the flies and afford a little shade. These same symptoms are found in vaccinated herds as well as in herds untreated for cholera. There is as a rule more or less discoloration of the mucous membranes and in the majority of cases one observes rapid breathing, very often panting like that of a dog after a hard run in warm weather. Some recover completely while in others the disease runs a chronic course and they die in from three to eight weeks, having become emaciated. Some cases terminate fatally within seventy-two hours.

Post-Mortem Findings

On opening the abdominal and thoracic cavities, one will at first on looking at the peritoneum find more or less paleness. The stomach appears normal. The small intestines are full of semi-liquids and gases, and occasionally dark blue spots are found throughout the whole of the small intestines. In about 80 per cent of the cases, one finds worms in various numbers, notwithstanding often the hogs have been fed proprietary worm powders. The large intestines are usually full of mottled feces covered with mucus; the kidneys are enlarged but without much petechia; the spleen is enlarged and very friable; and the liver is also enlarged. These intestinal symptoms, with the exception of worms, are not found in more than 25 per cent of my autopsies.

Methods of Control

Under the impression that hemorrhagic septicemia or swine plague is the disease and that the rest are complications, I diet the hogs for forty-eight hours on nothing but water, and give a worm capsule. I give two c. c. of hemorrhagic septicemia bacterin (not vaccine) and leave in the drinking water a solution of eucamphol. Five to seven days later I follow with the serum and virus, giving to a sixty pound shoat 35 c. c. serum and 2 c. c. virus, and 2 c. c. hemorrhagic septicemia vaccine. I inject all into the deep seated muscles of the ham, for I have to my own satisfaction been convinced that this is the only place to properly make the injection since absorption in other places is too uncertain and slow. Besides abscesses rarely result from this method, I should say in less than one per cent of the animals vaccinated. I instruct the owner to withhold corn from the animal for ten days to two weeks and occasionally to give some antiseptic solution in the drinking water.

My idea in discarding the mixed infection bacterin is that the B. suisepticum is the primary and important invader and the one to combat, and in mixed infection bacterins there is not enough of the B. suisepticum. By this treatment, hogs have been clearing up in five to ten days.

The theory for the use of bacterin as the first dose is that it stimulates the hog enough so it can stand the serum treatment and also the vaccines, and by this method we are bound to get a more permanent immunity. The symptoms all clear up after three or four weeks with but very slight losses, which occur only in those that are beyond help.

If there are indications of necrobacillosis to any degree of severity, I have found nothing to do them any good, but a large dose of autogenous bacterins, 4 c.c., followed in five to seven days with 6 c.c., and then recovery is complete. But so far I have been unable to do anything with necrotic rhinitis. I use the autogenous bacterins and segregate, for here is a condition, which according to my experience, when once developed in a shoat, always kills.

I take this opportunity to suggest also to all

veterinarians that they make a close observation of the difference in action of carotid-bled and tail-bled serums.

Hillsboro, Ind. F. W. GRAVES.

QUICK ACTING CATHARTICS SUCCESSFUL IN IMPACTION.

Horses that are over abundantly fed or kept upon food that is especially indigestible, constitute the chief sufferers from impaction. Grains like maize or wheat which are heating, pass rapidly through the stomach in an imperfectly digested condition and seem to accumulate in the large intestines.

Any indigestible and innutritious fodder or hay, taken in large quantities tends to cause impaction. Even green alfalfa and green clover oftentimes produce impaction of the worst kind.

Impaction may, however, occur at any part of the large intestines. The ingesta accumulates in the portion which does not contract sufficiently to pass it onward.

Symptoms.—In the mild form which usually follows a dry bulky feed of fodder or hay, there will be slight colicky pains come on after feeding, for several days in succession, until they become more persistent and severe.

There is special tension of the right side of the abdomen, the animal acts uneasy, paws, looks at the flanks, pushes backward to press the tail against the barn or any solid object, lies down and rolls, rises and passes a little manure or flatus.

However, the obstruction becomes more complete and the colic more severe. As the disease advances the animal sits on its haunches to relieve the pressure on the diaphragm. When standing there is a disposition to stretch the fore limbs out forward and the hinds ones backward. At first a little feces may be passed, but this soon ceases.

Treatment.—This will vary according to the stage and degree of illness. In slight cases, give one quart of raw linseed oil, add one ounce oil turpentine, given at one dose, with bran mashes, plenty of good water and active exercise. In the more violent cases we must resort to more active measures. But now comes the danger and good judgment must be used. Do not use too drastic purgatives, as they will surely kill. Give one-half to one ounce of chloral hydrate in pint of water, or one and one-half to two drams of acetanilid in capsules to control the pain. These anodynes do not retard the action of quick acting cathartics. Repeat in an hour if necessary. Give pilocarpin one grain in conjunction with eserin one grain, hypodermically. If at the end of two or three hours the animal is no better, give arecolin one-half grain, lobelin sulphate one-tenth grain, strychnin sulphate one-quarter grain. This line of treatment has proved highly satisfactory with me.—F. F., Oklahoma.

MYSTERIOUS DEATH OF CATS

A client of mine living near here has had an experience for the past ten years that beats anything I have ever seen or heard of.

The history is that every cat that has eaten a rat on this farm died with one exception. The owner says that he has lost no less than forty cats in the past ten years from that one cause. After the cat eats the rat, it becomes sick in from twelve to twenty-four hours. Symptoms, drowsiness, refuses all food, severe constipation, gradually becoming weaker and weaker until death relieves the condition, which occurs in about four days.

The exception referred to above was a two-year old cat that was sick for about three weeks and developed a swelling in the submaxillary region which suppurated and ran for about a week, then healed. This discharge was a thin yellow pus. This one cat is the only one that ever survived the condition whatever it is.

As a matter of interest I am writing this query, hoping it will be possible for some one of the readers of the JOURNAL to give me some light on this as to cause and prevention.

Gibson City, Ill. JAS. HORN.

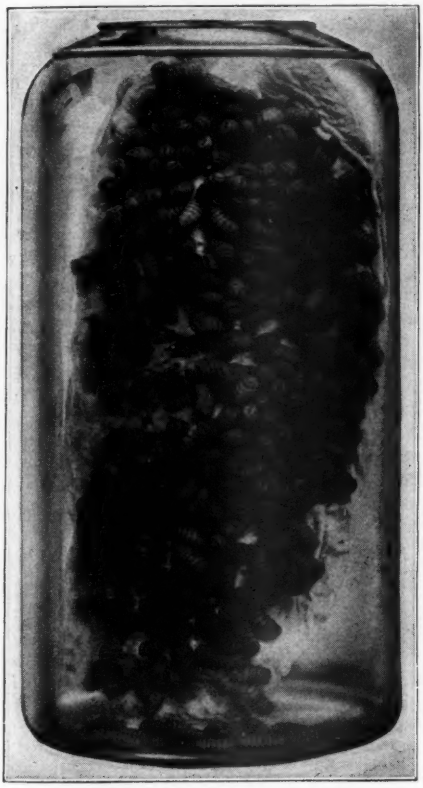
PRACTICE IS HELPED BY AUTOPSIES

On March 11th at one in the morning, I received a call to go four miles to see a mare that had been sick for a day. I found a black mare, six years old, in pain, pulse 90, temperature 105° F., vomiting, nervous prostration, hurried respiration, sweating in patches, mucous membranes cyanotic and the animal sitting on its haunches like a dog. I gave my diagnosis as a rupture of the stomach and told the farmer nothing could be done, but a smart Aleck had been there two hours before and said "Colic." So Mr. Farmer did not say much as he did not see how a rupture could happen in the stomach unless from a bullet or a wound.

I gave the mare three grains of morphin. Thirty-five minutes later, the horse took a lunge ahead and fell dead, without a kick. I had been expecting to see this at any minute, and now I felt quite sure that my diagnosis had been correct. As it was pitch dark, I told the farmer I would wait till daylight, and still studying my client, I could see that the diagnosis of rupture puzzled him. At daylight I hauled the horse one mile from the barn and held an autopsy. On opening the belly, about two gallons of linseed oil ran out, and I was then certain what I had. I took out the stomach and a rupture five inches across was plainly visible. I showed it to the owner, and cutting out the rupture, we discovered that the inside of the stomach was lined with bots

as thick as they could stick to the surface. The look that came over the face of the farmer was one not to be forgotten. I drove in to my office and putting the edges of the rupture under the magnifying glass, I showed my client where the walls of the stomach at this point were eaten down fine as a thread. Yes, he was satisfied.

I have had a number of cases like this for the last ten years. I want to point out that one should not be a bit afraid to have an au-



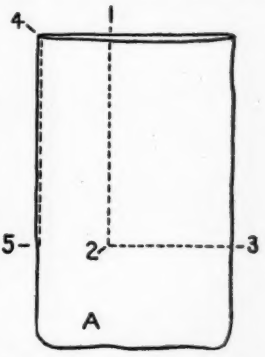
A portion of the gastric wall enclosed in an ordinary one quart, self sealing fruit jar, with its entire surface completely studded with the larvæ of Gastrophilus equi (bots).
Tama, Iowa. *Fred M. Maxfield.*

topsy as it is worth gold lots of times. I have gone out with a lamp on a cold snowy night and held a post mortem examination, and I tell you I have benefited by it in dollars. Having proved your case to some farmer means a lot in your practice. It has helped mine. It makes your clients have faith in you, and you can mostly get your price in cash. I have in my office a large collection of nails, bones, stones, wire and odds and ends that I have removed from stomachs, not to look at, but for the satisfaction of showing the farmer that nothing could be done in such cases. When I go to get cash, the easiest time in the world to collect is right now. There are some who are always trying to "knock" the veterinarian, especially the smart Aleck with the bottle of booze in the back of his car for a lunch on calls.

Vanguard, Sask. R. J. WALSH.

BANDAGE FOR POULTICING HORSE'S FOOT

A very suitable bandage for poulticing a horse's foot may be made as follows. Take a grain sack and cut as shown in the illustration from No. 1 to No. 2, then to No. 3, leaving the sack in an L-shape. Then cut from No. 4 to No. 5, which leaves two tails to tie with. Place the horse's foot in the sack at letter A, bringing the end of the sack up over the toe and the tail end pieces around the foot, one from one side and one from the other, around the foot and back to where you started and tie with the tail ends. I find this very easy and simple to apply and if applied correctly will not become loose as the horse moves about.



Overbrook, Kans. C. I. CRAWFORD.

COPHORECTOMY IN THE TOM CAT

At a certain well recognized veterinary college, a junior student employed by the college stood basking in the sun in the doorway of the school building. Business was slack, and the student with a good eye for business was watching the street for a "case" on which to practice. His eye fell on the trim form of a well dressed young woman approaching and for several minutes failed to detect the cat which she carried in her arms. On reaching the college, the lady stopped and read the name on the building, then asked the student if he was the doctor. On hearing that he was, she blushed deeply and said she would like her cat to be treated so as to prevent its having kittens. "A very simple operation," the doctor assured her, "and no danger to the cat."

The cat was taken into the hospital, and the aid of another junior and a senior student was speedily summoned. In a very scientific manner, the cat was put under the influence of ether, the field of operation prepared in true surgical fashion and the operation started. The

incision made, the next thing to do was to find the ovaries and uterus, which proved a difficult task. The aid of an old practitioner was sought, and he promply lent advice by pointing out the uterus and directing the operator to follow it to the bifurcation. The only bifurcation that could be found proved to be a loop in the mesentery, which was being followed instead of the uterus.

Another graduate happened to drop into the operating room, and upon seeing the students in trouble, volunteered to help them. His services were very limited, however, as he merely looked at the posterior aspect of the cat and remarked, "That's the first case of oophorectomy I've seen performed on a tom cat." The incision was promptly sutured up, the tom unsexed, and on the return of the cat to its owner, the full assurance of the student doctor was given that it would never have kittens.

D. U. C.

A DRY DRESSING SUCCESSFUL IN A SERIOUS WOUND

A city fireman called me early one Sunday morning to see an Italian's horse that was bleeding from wounds in the neck, inflicted by some miscreant during the previous night. Two slashes had been made through the skin on the side of the neck and another in front, entirely across the neck and into the trachea at the upper part of the neck near the throat latch place. I checked the hemorrhage, dressed the wounds with olive oil and sulphuric acid and inserted nine large separate sutures.

The owner called me a few days later and stated the horse had rubbed the stitches away. I then decided to call a fellow practitioner in consultation, and he advised cleansing the wounds thoroughly with hot water and antiseptic soap and dressing with antiseptic powder, side-lining except when feeding. The case terminated favorably; the miscreant was not apprehended.

Wound treatment has undergone vast improvement during my fifty years practice, and we see some interesting cases among foreigners in this cosmopolitan city of Pittsburgh, where I was city veterinarian for fifteen years.

Pittsburgh, Pa. N. RECTENWALD.

CORNSTALK DISEASE IN CATTLE AND HORSES

The so-called corn stalk disease in cattle is probably in the larger percentage of cases no more than a type of hemorrhagic septicemia. Post-mortem lesions usually indicate this trouble; at least, it has in my general practice. By the use of the hemorrhagic septicemia vaccine (bovine) and placing the cattle in the same fields, there is no further loss. Since this product has been on the market, I find no trouble in checking and controlling an outbreak of so-called corn stalk disease.

This same disease in horses and especially in young horses in the majority of cases, is no more than schistosomiasis. Post-mortem findings quiet often show multitudes of these worms. By the use of purgatives, vermifuges and sodium cacodylate, the cases that are desirable to treat will recuperate and recover. These horses may be placed in the same fields with no further losses. The use of sodium cacodylate intravenously will put the horse on his feet if there is a ghost of a chance. In many instances it is remarkable how quickly the horse will be found up and beginning to recuperate.

Tama, Ia. FRED M. MAXFIELD.

BACTERINS IN THE PREVENTION AND TREATMENT OF SHIPPING FEVER

Many exaggerated claims have been made for the various bacterins employed for the prevention and treatment of shipping fever. The successes of some veterinarians are not the experiences of others. This may be due to the lack of skill in knowing when to employ them to obtain the best results. Regardless of any argument on either side, this fact is true. These bacterins were not found on the army medical supply table. It is apparent that the results obtained in their general use did not warrant the department to go to the expense of placing them on the supply table either for the prevention, or for the treatment of these cases.

In general practice it is a great question whether or not these bacterins are useful in the line of treatment. At least usually no marked beneficial value is noticeable. However, in the country stables where the disease has not as yet developed, their use is certainly indicated for prevention. Remarkable passive immunity is distinctly noticeable. Where the stables have been exposed, all animals showing a rise of temperature, bacterins used for preventive measures cannot be relied upon. Sometimes in such cases good results are apparently obtained from their use, but these results are not constant nor uniform. To my mind this accounts for the varied reports and claims for the use of these bacterins in the prevention and treatment of shipping fever. However, these results that are found in a general country practice were not the results found at the remount stations.

Considered from the standpoint of the army veterinarian, shipping fevers include pink eye, influenza, strangles, contagious pleuro-pneumonia and all the complications that follow any one or all these diseases. They are true infective diseases.

The predisposing factors are grouping large numbers of horses together, fatigue, poor shelter and continued excitability, as in long transportation journeys.

Results:—Even after the employment of the bacterins at the sale stables following purchase, by the time these animals land in the remount,

many of them have developed some form of shipping fever or some complication that follows them.

Tama, Ia. FRED M. MAXFIELD.

NECROBACILLOSIS

In a herd of hogs being fed uncooked garbage, four took sick, showing temperatures of 104° F. to 106° F. and unsteady gait. The owner said they had coughed some. He wanted the herd vaccinated with anti-hog cholera serum. Three of these four had been treated by me six months previous and I advised him to sell the ones not sick, as they were separated, and since three of the four had been treated, I could not advise treating again as it really did not seem rational. I left some necrobacillosis powder and advised change of feed and quarters, and told the owner if they died, I wanted to see them. The first three seemed to do fine for three weeks but then died. It was impossible, however, for me to get around to autopsy them.

The fourth one died about two months after I had first visited the herd. This was a large, fat sow, and the owner said she had been looking well. I was surprised to note how fat she was. Autopsy revealed her throat to be in awful shape, all necrotic including the trachea, while one lung was gangrenous.

I did not use mixed infection bacterins as I did not think they would do the business. I have had other cases of this kind, but vaccination seems to have saved them, although it did not in this herd.

Mishawaka, Ind. H. J. MAGRANE.

RESECTION OF THE PERFORATUS AND PERFORANS A SUCCESSFUL OPERATION

The operation for contracted tendons, which is commonly done in some places and by some men, is in my opinion one of the operations which gives the most gratifying results. I do not know who first did the operation or when, but I do know that with me it has been very successful.

Tenotomy or the cutting of a tendon or tendons is indicated in all cases of a contracted tendon or tendons in which the joint or joints have not ankylosed. The most common contractions for which tenotomy is done is for for contraction of the perforans or perforatus tendons or both. It should be done only when the acute inflammation is past and the tendon is shortened.

In mild cases that have not become chronic, stimulating liniments or even a biniodid blister applied and allowed to remain two or three days is good treatment. The heels should be raised by means of calks and as lameness lessens lowered gradually.

If this foregoing fails and in pronounced cases an operation is indicated, be sure before attempting operation that the joint is not involved, for if ankylosis has taken place, the operation will be of no benefit. Cocain the plantar nerves midway between the knee and fetlock in front leg or hock and fetlock in hind. Clip hair on outside of leg to be operated upon, in front leg about 5 to 6 inches below knee and in hind leg about 6 to 8 inches below point of hock. Shave the skin and wash with disinfectant, wiping dry and then paint with tincture of iodin. A small incision, one-fourth inch long, is made through the skin with point of knife. Then with a short blunt pointed, curved bistoury, push the knife through the connective tissue until the point can be felt on the inside of the leg. Then cut tendons by cutting a little of the tendon at a time, always keeping the left hand on inside of the leg so the knife can be felt. Only cut few strands at a time, as this gives better results than to cut both tendons with one cut. Of course, it is not always necessary to cut both, as sometimes only one tendon is involved. If the perforans is contracted push the knife in between the perforans and perforatus being sure to get high enough so as not to injure the tendon sheath. The rest of the operation is done the same as when the tendons are cut. Just before the tendon which is contracted is cut through, if the foot is taken and flexed or the horse is in the standing position, there will be a snap heard and down comes the foot in its natural position.

One suture is all that is necessary to close the wound and in fact I seldom put in any. It is painted with iodin and bandaged. A shoe is then put on with braces on the sides and a wide leather strap to hold up the fetlock, and three-fourth inch heel calks but no toe calks. This is all that need be done for ten days to two weeks, when the shoe is taken off and an ordinary shoe put on with the heel calks about one-fourth inch higher than the toe. Turn the horse out to pasture for two weeks. Then he may be put to light work and increased gradually so that in six weeks he should be as good as ever. The one great feature of success in this operation is to be sure your knife is sterile. Suppuration is a hindrance, and your case will not make as complete a success as when it heals by first intention.

A gray gelding, eight years old, was shown me by an agent for the S. P. C. A., and the local chief of police, who were going to kill the animal unless the owner would have something done for it. The owner believing nothing could be done submitted to the taking of the animal, but the agent and officer wanted to give the owner all the chance possible so offered him the privilege of having me come and see the animal at their expense and they would do as I said. When I said I could operate and the animal would in all probabilty be as good as ever, the owner asked the price of the operation. I told him it would cost $35. He wanted a guarantee and when I said I couldn't guarantee anything, he replied that they could kill the horse and he would skin it and get $5 for the hide. I told him

if that was the way he felt about it I would give him $5 and have the hide on if he would bring the horse to my hospital. That night he brought the horse and took his check for $5. The next noon I operated, put on a shoe and in four weeks this horse was put out on a farm for light work. I saw the horse a week later and asked how he worked. I was told he worked as good as any horse on the farm and did not go lame even after a day's work mowing grass or ploughing. In this case I cut both tendons, as they were contracted due to a chronic tendonitis that had been neglected. This horse walked right up on his toe and could not bend the fetlock at all. Today he is worth about $200, and the best part of it is the animal is worth that amount again as an advertisement.

In conclusion, will say, do not be afraid to operate for contracted tendons. I only cite one case, but I have done several with the same success.

Amherst, Mass. F. G. RUDER.

EVERSION OF THE VAGINA AND UTERUS PRESENTS UNUSUAL DIFFICULTIES

A case selected from a number of cases of this nature, which occurred this year and deserves mention, happened in a two and one-half year old, fawn colored, muley, grade Jersey heifer, weighing approximately 800 pounds and in medium flesh.

History: The owner stated that the heifer was giving birth to her first calf July 6 and that the animal seemed to have been laboring from about ten o'clock in the morning of that date until late in the evening. He further stated that, having assisted cows in delivering their young in many previous cases, he had inserted his hand to aid, but upon following his usual and familiar procedure, he was surprised to find no trace of a calf. He had never seen anything like it. Having only recently purchased the animal and fearing the development of complications which he could not handle, he decided to call a veterinarian.

On arrival I found the animal lying on her left side, laboring strenuously. Palpation revealed the fetus in a normal dorsolumbar position with an anterior presentation and the water sac still unbroken. The front feet and nose of the fetus were lodged under the pubis, causing the dystocia. The fetus required only to be repelled and the parts mentioned lifted over the obstacle, which was easily done. The calf proved to be normal. The mother's bowel movements were of a sufficiently laxative nature to lead one to think that favorable results would follow. Examination showed an apparently normal uterus and the owner was advised to wait at least three days for a normal expulsion of the placenta. No sooner had I reached home than the owner called and reported that an eversion of the uterus had occurred.

This animal possessed the most roomy genita passages and the largest vaginal opening I had ever seen in a Jersey cow of this size, and it seems only justifiable to blame this anatomical characteristic for the eversion, in connection with atony and a stretched condition of the broad ligaments, and also a tympanitic condition of the rumen, possibly due to the prolonged recumbent position.

Uterus and vagina protruded in a completely inverted position and were covered with straw and excrement. The animal preferred to remain lying down due to her weakened condition from over-exertion. The eyes were anxious and the pulse accelerated.

Due to the unfavorable surrounding conditions, the prognosis given the owner was grave, but I made him understand that if good faithful care was given and the directions left him rigidly followed, a faint chance for recovery existed.

Treatment: The owner procured a clean wagon sheet which was slipped under the buttocks of the animal and spread out so the uterus could be placed upon it. The uterus was cleaned and flushed thoroughly with a warm solution of permanganate of potassium. The permanganate solution was kept flowing constantly upon the organs during the entire operation. Finding it impossible to reduce the uterus against the straining of the patient and not having a tracheotomy tube at hand, anesthesia was resorted to. The misplaced parts were then with considerable effort rolled back into position, but upon recovering from the anesthetic, the cow re-commenced her laboring or straining.

It was found impossible to keep the uterus in apposition without the use of a pessary or sutures. Preferring the former method, one was applied in the form of a long-necked wine bottle, filled with warm water and disinfected carefully, then placed within the vagina and fastened in place by boring a hole into a square one-inch block, into which the neck of the bottle was inserted and made fast. A hole was then bored through each corner of the block and a small cotton rope drawn through these holes. With this rope the improvised pessary was secured in place.

The animal remained in a recumbent position, taking neither food nor water for two days. The pessary was removed in twenty-four hours and the uterus flushed with piping hot permanganate solution and siphoned out well. This flushing and siphoning were performed three times afterwards, twenty-four hours apart with physiological salt solution to prevent the absorption of pus from the uterus during the pustulant endometritis which followed. The bowels were kept in a laxative condition. Stimulants were used to tide the animal over the critical period. Internal antiseptics were administered by the mouth over a period of two weeks. At this writing the cow has completely recovered, and the owner states that she is now "eating her head off." E. R. DERFLINGER. Eugene, Ore.